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TRANSACTIONS

OF THE

Indiana Horticultural Society

FOR THE YEAR 1910

Being a Report of the Fiftieth Annual Meeting, held in Rooms 11 and 12 State House, Indianapolis, Ind., December 7 and 8, 1910, together with the Proceedings of the State Board of Horticulture, Local Societies and such other Papers as it seems proper to publish in this connection.

EDITED BY

C. G. WOODBURY, SECRETARY

LAFAYETTE, IND.

TO THE GOVERNOR

INDIANAPOLIS:

WM. B. BURFORD, CONTRACTOR FOR STATE PRINTING AND BINDING

1911

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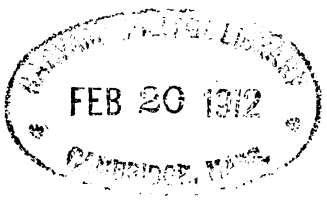

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THE STATE OF INDIANA.

EXECUTIVE DEPARTMENT.

March 29, 1911.

Received by the Governor, examined and referred to the Auditor of State for verification of the financial statement.

OFFICE OF AUDITOR OF STATE,

INDIANAPOLIS, April 29, 1911.

The within report, so far as the same relates to moneys drawn from the State Treasury, has been examined and found correct.

W. H. O'BRIEN,
Auditor of State.

April 29, 1911.

Returned by the Auditor of State, with above certificate, and transmitted to Secretary of State for publication, upon the order of the Board of Commissioners of Public Printing and Binding.

MARK THISTLETHWAITE,
Secretary to the Governor.

Filed in the office of the Secretary of State of the State of Indiana, April 29, 1911.

D. G. ELLINGHAM,
Secretary of State.

Received the within report and delivered to the printer May 1, 1911.

ED. D. DONNELL,
Clerk Printing Board.

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LETTER OF TRANSMITTAL.

To His Excellency, Hon. Thomas R. Marshall, Governor of Indiana:

Sir—In accordance with the requirements of the law, I have the honor to present to you herewith the fiftieth annual volume of transactions of the Indiana Horticultural Society, together with such other papers as seem to be appropriate for publication in this connection.

Respectfully,

C. G. WOODBURY,
Secretary.

March 15, 1911.

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OFFICERS OF THE SOCIETY AND COMMITTEE ON HORTICULTURE FOR 1910-11.

President	C. N. LINDLEY	Salem.
Vice-President	J. C. GROSSMAN	Lafayette.
Secretary	C. G. WOODBURY	Lafayette.
Treasurer	S. A. HAZELETT	Greencastle.

District Vice-Presidents.

First District	W. J. RITTERSKAMP	Princeton.
Second District	R. A. SIMPSON	Vincennes.
Third District	F. J. HEACOCK	Salem.
Fourth District	H. M. STOUT	Trafalgar.
Fifth District	JAS. W. CARVER	Greencastle.
Sixth District	J. K. HENBY	Greenfield.
Seventh District	J. J. MILHOUS	Valley Mills.
Eighth District	A. W. SHOEMAKER	Daleville.
Ninth District	J. M. SNODGRASS	Kirklin.
Tenth District	WM. M. WALTON, JR	Laporte.
Eleventh District	J. A. STEINMAN	McCrawsville.
Twelfth District	W. F. DEVILBISS	Ft. Wayne.
Thirteenth District	GEORGE MATTHEWS	South Bend.

Executive Committee.

W. B. FLICK, Lawrence. H. H. SWAIM, South Bend.
E. Y. TEAS, Centerville.

Committee in Control of Experimental Orchard.

C. M. HOBBS, Bridgeport. D. B. JOHNSON, Mooresville.
F. J. HEACOCK, Salem.

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OFFICERS OF THE INDIANA HORTICULTURAL SOCIETY SINCE ITS ORGANIZATION IN 1860.

DATE.	PRESIDENT.	FIRST VICE-PRESIDENT.	SECRETARY.	TREASURER.
1860	*Reuben Ragan	William Miller	Wm. H. Loomis	John C. Teas.
1861-2	*John A. Matson	*William Miller	*Wm. H. Loomis	John C. Teas.
1863	I. D. G. Nelson	Joseph Orr	Geo. M. Beeler	John C. Teas.
1864	I. D. G. Nelson	Joseph Orr	Geo. M. Beeler	John C. Teas.
1865	I. D. G. Nelson	Joseph Orr	Geo. M. Beeler	Calvin Fletcher.
1866	I. D. G. Nelson	*Joseph Orr	*Geo. M. Beeler †Samuel V. Morris	Calvin Fletcher.
1867	I. D. G. Nelson	Allen Furnas	Seth W. Pearson ‡Joseph Gilbert	J. S. Dunlop.
1868	I. D. G. Nelson	*Allen Furnas	Seth W. Pearson ‡Joseph Gilbert	*J. S. Dunlop.
1869	*I. D. G. Nelson	S. Burnett	T. A. Bland ‡W. H. Ragan	Charles Lowder.
1870	Allen Furnas	J. C. Ratliff	Seth W. Pearson ‡W. H. Ragan	Charles Lowder.
1871	Allen Furnas	J. C. Ratliff	W. H. Ragan	Charles Lowder.
1872	J. C. Ratliff	I. S. Jessup	W. H. Ragan	Charles Lowder.
1873	J. C. Ratliff	I. S. Jessup	J. G. Gingsbury	Charles Lowder.
1874	J. C. Ratliff	*I. S. Jessup	W. H. Ragan	Charles Lowder.
1875	Joseph Gilbert	J. A. Mendenhall	W. H. Ragan	Charles Lowder.
1876	Joseph Gilbert	*J. A. Mendenhall	W. H. Ragan	Charles Lowder.
1877	Sylvester Johnson	J. M. Bulla	W. H. Ragan	Daniel Cox.
1878	Sylvester Johnson	J. M. Bulla	W. H. Ragan	Daniel Cox.
1879	Sylvester Johnson	*J. M. Bulla	W. H. Ragan	Daniel Cox.
1880	Sylvester Johnson	S. Burnett	W. H. Ragan	Daniel Cox.
1881	Sylvester Johnson	*S. Burnett	W. H. Ragan	Daniel Cox.
1882	Sylvester Johnson	J. B. Elliot	W. H. Ragan	Daniel Cox.
1883	Sylvester Johnson	C. M. Hobbs	‖W. H. Ragan †C. M. Hobbs	Daniel Cox.
1884	Sylvester Johnson	E. Y. Teas	C. M. Hobbs	Daniel Cox.
1885	Sylvester Johnson	E. Y. Teas	C. M. Hobbs	Daniel Cox.
1886	Sylvester Johnson	E. Y. Teas	C. M. Hobbs	Daniel Cox.
1887	Sylvester Johnson	E. Y. Teas	C. M. Hobbs	Daniel Cox.
1888	Allen Furnas	W. A. Workman	C. M. Hobbs	Daniel Cox.
1889	*Allen Furnas	J. C. Stevens	C. M. Hobbs	Daniel Cox.
1890	J. C. Ratliff	Joe. A. Burton	C. M. Hobbs	*Daniel Cox. †S. Johnson.
1891	E. J. Howland	Joe. A. Burton	W. H. Ragan	W. A. Workman.
1892	E. J. Howland	E. Y. Teas	W. H. Ragan	W. A. Workman.
1893	C. M. Hobbs	E. Y. Teas	W. H. Ragan	W. A. Workman.
1894	C. M. Hobbs	E. Y. Teas	W. H. Ragan	F. Beeler, Sr.
1895	C. M. Hobbs	E. Y. Teas	W. H. Ragan	*F. Beeler, Sr.
1896	C. M. Hobbs	E. Y. Teas	Jas. Troop	Isham Sedgwick.
1897	C. M. Hobbs	E. Y. Teas	Jas. Troop	Isham Sedgwick.
1898	C. M. Hobbs	E. Y. Teas	Jas. Troop	Sylv. Johnson.
1899	C. M. Hobbs	E. Y. Teas	Jas. Troop	Sylv. Johnson.
1900	C. M. Hobbs	Mrs. W. W. Stevens	Jas. Troop	Sylv. Johnson.
1901	C. M. Hobbs	Mrs. W. W. Stevens	Jas. Troop	Sylv. Johnson.
1902	W. W. Stevens	E. B. Davis	W. B. Flick	Sylv. Johnson.
1903	W. W. Stevens	H. H. Swaim	W. B. Flick	Sylv. Johnson.
1904	W. W. Stevens	H. H. Swaim	W. B. Flick	Sylv. Johnson.
1905	H. H. Swaim	W. C. Reed	W. B. Flick	L. B. Custer.
1906	H. H. Swaim	W. C. Reed	W. B. Flick	S. A. Hazelett.
1907	W. C. Reed	L. B. Custer	W. B. Flick	S. A. Hazelett.
1908	W. C. Reed	C. N. Lindley	W. B. Flick	S. A. Hazelett.
1909	C. N. Lindley	J. C. Grossman	C. G. Woodbury	S. A. Hazelett.
1910	C. N. Lindley	J. C. Grossman	C. G. Woodbury	S. A. Hazelett.

*Deceased. †Appointed to vacancy. ‡Corresponding Secretary. ‖Resigned.

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CONSTITUTION AND BY-LAWS

OF THE

INDIANA HORTICULTURAL SOCIETY

CONSTITUTION.

Article I. This organization shall be known as the Indiana Horticultural Society.

Article II. The objects of the Society are to develop facts and promulgate information pertaining to the science and art of horticulture.

Article III. Its officers shall consist of a President, a Vice-President, Secretary, Treasurer, and Executive Committee of three.

Article IV. There shall be a Committee on Horticulture consisting of one member from each Congressional District.

Article V. Its members shall consist of annual members, paying a fee of one dollar per annum into the treasury of the Society, and honorary members, who shall be elected by the Society for merit as horticulturists of distinction, who may, at pleasure, participate in the deliberations of the Society. Members' wives will be members without fee.

Article VI. Each member shall be entitled to a copy of the transactions of the Society as often as the same shall be published.

Article VII. The Treasurer shall not disburse money except on the order of the Secretary, countersigned by the President.

Article VIII. The Executive Committee shall require of the Treasurer such security as may be deemed sufficient for the safe keeping of the funds of the Society.

Article IX. The seal of the Society shall consist of an outer rim, embracing the inscription, "Indiana Horticultural Society;" within this, and above the central figure, consisting of a vase of flowers, a pear and apple resting upon a section of vine with its fruit, the words, "Organized 1860;" below, "Incorporated 1875."

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BY-LAWS.

I. The President shall preside at all meetings of the Society; he, together with the Secretary, shall have power to call meetings of the Executive Committee; he shall present to the Society in his annual address such suggestions and recommendations as may seem appropriate, and shall appoint all special committees unless otherwise directed by the Society.

II. The Vice-President shall preside in the absence of the President. Each member of the Committee on Horticulture shall be elected to represent his respective district, said districts to be the Congressional Districts as existing in 1902. Each member of the Committee on Horticulture shall make annual reports to the Society, embracing such suggestions and recommendations as may to him seem best for the promotion of the horticultural interests of said district, and he shall give such attention to the organization and building up of local societies in his district as may be within his power.

III. The Secretary shall record all the doings of the Society, collate and prepare all communications, etc., for the public press, and pay over all moneys received from members, or otherwise, to the Treasurer, on his receipt; shall receive and answer all communications addressed to the Society; establish and maintain correspondence with all local, county, district and State horticultural societies, and secure by exchange their transactions, as far as possible, to aid the President, as an executive officer, in the dispatch of business relating to the meetings of the Society, preparing and publishing circulars and notices of horticultural and similar meetings of general interest, and report to the annual meeting of the Society an abstract of the matter that has come into his possession, which, with its approval, shall become part of the transactions for the current year. He shall also act as librarian of the Society, and shall have the care and custody of its room and its property, under such regulations as may be adopted for the government thereof.

IV. The Treasurer shall receive and hold all funds of the Society, paying out the same only as prescribed by the Constitution. Before entering upon his duties he shall give bond to the Society in the sum of two thousand dollars ($2,000) for the faithful performance of such duties.

V. The officers shall be elected annually, by a ballot vote, and shall serve until their successors are elected and qualified.

VI. The objects of the Society being to collect, condense and collate information relative to varieties of fruits and other horticultural products, and dispense the same among the people of the State, every member shall pay into the treasury one dollar a year for the purpose of publishing and

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other expenses: Provided, That members of local horticultural societies may become members by paying into the treasury, through their respective local organizations, the sum of fifty cents each. Any person interested in horticulture may become a member by forwarding to the Treasurer or Secretary the fee of membership.

VII. The President, Secretary and Executive Committee may call a meeting of the Society at any time and place they may consider advisable by a notice of thirty days in the public press, or by circulars properly distributed.

VIII. This Society shall hold an annual meeting on the first Wednesday in December of each year, and at such place as the Society shall designate at its previous meeting, and semi-annual and called meetings may be held as provided for in the preceding section.

IX. The officers of this Society shall constitute a Board of Horticulture, five of whom shall be a quorum for the transaction of business, the officers of the Society to be officers of the Board, said Board to meet immediately on the adjournment of the Society, and afterward on its own adjournment. It shall be the duty of the Board of Horticulture to investigate all accounts or claims against the Society, when presented for payment; to collect horticultural information, for which it may employ an agent, or agents, to visit different portions of this or adjoining States, and may draw on the treasury for money to pay the necessary expenses, when there is money in the treasury not otherwise needed, and said Board shall make full and definite report of its proceedings to the next regular meeting of the Society.

X. These by-laws may be amended and otherwise changed at any regular meeting of the Society by a majority vote.

XI. The thirteen congressional districts as now (1902) existing shall constitute the several Vice-President districts.

XII. The Legislative Committee shall consist of three members elected by the Society, who shall serve three years: Provided, That of the present committee (1906), W. B. Flick shall serve one year, C. M. Hobbs two years, and J. J. Billingsley three years.

XIII. No member shall be entitled to vote on any question before this Society unless he shall have paid his dues, and shall, at the beginning or during the session announce his presence to the Secretary; and it shall be the duty of the Secretary, when requested, to read such announcements and to call the roll from such list on questions before the Society (1908).

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LIST OF MEMBERS

OF THE

INDIANA HORTICULTURAL SOCIETY

For 1910

LIFE MEMBERS.

Name.	*Postoffice.*	*County.*
Burton, Joe A	Mitchell	Lawrence.
Butler, Prof. A. W	Indianapolis	Marion.
Cowing, Granville	Muncie	Delaware.
Hobbs, C. M	Bridgeport	Marion.
Kane, Morgan	Mitchell	Lawrence.
Shanklin, A. Y	Bringhurst	Carroll.
Teas, E. Y	Centerville	(Charter member.)
Woods, Arthur Earl	Clayton	Hendricks.

HONORARY MEMBERS.

Name.	*Postoffice.*
Bailey, Dr. L. H	Ithaca, N. Y.
Beach, Prof. S. A	Ames, Iowa.
Burrill, Prof. T. J	Champaign, Ill.
Craig, Prof. John	Ithaca, N. Y.
Dunlap, Hon. H. M. and wife	Savoy, Ill.
Farnsworth, W. W	Waterville, Ohio.
Garfield, Chas. W	Grand Rapids, Mich.
Green, Prof. W. J	Wooster, Ohio.
Hale, Hon. J. H	South Glastonbury, Conn.
Keach, James L	Indianapolis, Ind.
Lazenby, Prof. W. B	Columbus, Ohio.
Stanton, J. W	Richview, Ill.
Taft, Prof. L. R	East Lansing, Mich.
VanDeman, Prof. H. E	Washington, D. C.
Willard, S. D	Geneva, N. Y.

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ANNUAL MEMBERS.

Name.	*Postoffice.*	*County.*
Abraham, Omer	Martinsville	Morgan.
Achart, Levi	Laporte	Laporte.
Adams, Bruce	Fairmount	Grant.
Ake, Samuel	Ft. Wayne	Allen.
Allen, D. C	Greencastle	Putnam.
Andrew, W. H	Lagrange	Lagrange.
Apple, J. W	Oaklandon	Marion.
Baker, Jno. E	Zionsville	Boone.
Baldwin, T. A. and wife	Granger	St. Joseph.
Ballou, O. L	Lagrange	Lagrange.
Barnett, R. H	Logansport	Cass.
Bash, C. S	Ft. Wayne	Allen.
Beaver, Chester	Glenwood	Rush.
Beaver, J. M	Glenwood	Rush.
Beck, R. L	Liberty	Fayette.
Beechgood, Chas. H	Laporte	Laporte.
Beelar, John E	Zionsville	Boone.
Biliter, Ben F	Huntington	Huntington.
Billheimer, John C	Indianapolis	Marion.
Billingsley, Samuel	Greenwood	Johnson.
Blank, Charles	Michigan City	Laporte.
Bogue, A. H	Lagrange	Lagrange.
Borcherding, G. C	Seymour	Jackson.
Bowell, J. E	Laporte	Laporte.
Boyle, Jesse G	Lafayette	Tippecanoe.
Brawlier, A. H	Orland	Steuben.
Bridges, Chas. W	Frankfort	Clinton.
Buck, H. F	Elberfeld	Warrick.
Burris, J. B. and wife	Cloverdale	Putnam.
Burton, Turley J	Orleans	Orange.
Burwick, John	Fairmount	Grant.
Carroll, A. C	Ft. Wayne	Allen.
Carver, Jas. W	Greencastle	Putnam.
Case, R. L	Lagrange	Lagrange.
Caskey, Mrs. John	Fairmount	Grant.
Christie, Paul K	Hadley	Allen.
Clark, Ed. J	Shelbyville	Shelby.
Cleveland, A. C	Mitchell	Lawrence.
Coffin, J. F	Greenfield	Hancock.

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ANNUAL MEMBERS—Continued.

Name.	*Postoffice.*	*County.*
Coffing Bros	Silverwood	Fountain.
Cole, Dr. Albert M	Indianapolis	Marion.
Cole, B. F	Trafalgar	Johnson.
Coleman, S. S	Ft. Wayne	Allen.
Conger, Sid	Shelbyville	Shelby.
Corbly, Mrs. E. A	Indianapolis	Marion.
Cornett, J. W	Madison	Jefferson.
Cox, Milton	Fairmount	Grant.
Crane, J. W	Wingate	Montgomery.
Crawford, John A	Covington	Fountain.
Cunningham, A. B	Rising Sun	Ohio.
Custer, L. B	Logansport	Cass.
Cutler, James T	Evansville	Vanderburgh.
Darlington, Zeba	Pendleton	Madison.
Davis, Mrs. B. A	Laporte	Laporte.
Davis, Regin	Morristown	Shelby.
Deam, Chas. C	Bluffton	Wells.
Dean, Chas. E	Marble Hill	Jefferson.
Dean, Hiram P	Indianapolis	Marion.
Denny, Prof. Jas. T	Greencastle	Putnam.
DeVilbiss, W. T	Ft. Wayne	Allen.
Dietz, Harry F	Indianapolis	Marion.
Dixon, P. F	Ft. Wayne	Allen.
Dickson, John	Ft. Wayne	Allen.
Dougherty, Leon D	Cambridge City	Wayne.
Douglass, B. W	Indianapolis	Marion.
Dow Chemical Co	Midland, Mich.	
Eastman, W. R	Winona Lake	Kosciusko.
Ebner Ice & Cold Storage Co	Vincennes	Knox.
Edgerton, P. R	Marion	Allen.
Eickhoff, Edward	Wanamaker	Marion.
Elrod, Harry V	Orleans	Orange.
Everitt, J. A	Indianapolis	Marion.
Farlow, L. M	West Middleton	Howard.
Ferguson, L. E	White Pigeon, Mich.	
Fielding, John K	Glenwood	Rush.
Flanner, Frank W	Indianapolis	Marion.
Flick, W. B	Lawrence	Marion.

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ANNUAL MEMBERS—Continued.

Name.	*Postoffice.*	*County.*
Flory, A. E	Logansport	Cass.
Foorman, Eli	Eaton	Delaware.
Forbes, F. A	Plymouth	Marshall.
Garretson, Amos	Pendleton	Madison.
Garrett, F. B	Burns City	Martin.
Gast, R. N	Akron	Fulton.
Gebert, Leonard	Harrison, Ohio.	
Gerlach, Christian	Laketon	Wabash.
German Kali Works	Continental Bldg., Baltimore, Md.	
Gobin, Dr. H. H	Greencastle	Putnam.
Goble, Jas. N	Greenfield	Hancock.
Goddard, W. H	Muncie	Delaware.
Goepper, Jacob	Indianapolis	Marion.
Graham, A. A	Liberty	Union.
Gray, Stuart	Laporte	Laporte.
Greenfield, Dr. C. E	523 Douglass Boulevard, Chicago. Ill.	
Grimes, J. P	Salem	Washington.
Grossman, C. M	Petoskey, Mich.	
Grossman, J. C	W. Lafayette	Tippecanoe.
Gustin, E. R	Peru	Miami.
Hadley, J	Danville	Hendricks.
Haines, N. C	Pendleton	Madison.
Hale, H. J	Indianapolis	Marion.
Halstead, Wm. and wife	Rensselaer	Jasper.
Harper, Jno. E	Morristown	Shelby.
Harris, F. L	Glendale, Ohio.	
Hart, Wm	Peru	Miami.
Hawkins, Ernest	Indianapolis	Marion.
Hazelett, Samuel A	Greencastle	Putnam.
Heacock, F. J	Salem	Washington.
Heine, H. E	Wanamaker	Marion.
Henby, E. A. and wife	Greenfield	Hancock.
Henby, J. K	Greenfield	Hancock.
Henderson, R. D. and wife	Carlisle	Sullivan.
Henry, Don J	Laporte	Laporte.
Hill, E. W	Winchester	Randolph.
Hitchcock, Don R	Brimfield	Noble.
Hitz, L. E	Madison	Jefferson.
Hobbs, O. A	Indianapolis	Marion.

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ANNUAL MEMBERS—Continued.

Name.	*Postoffice.*	*County.*
Hobbs, Harry W	Bridgeport	Marion.
Hoffman, D. E	Winchester	Randolph.
Holterman, W. D	Ft. Wayne	Allen.
Homer, M. E	Lima	Lagrange.
Hoover, O .P	Maywood	Marion.
Hopkins, L. V	Greenfield	Hancock.
Horner, M. E	Brighton	Lagrange.
Horton, John	Newburg	Warrick.
House, J. L	Fayette, Mo.	
Howland, Elisha	Indianapolis	Marion.
Inman, Ira Newton	Millgrove	Blackford.
Jenks, N. T	Laporte	Laporte.
Jester, L. N	Colburn	Tippecanoe.
Jester, S	Delphi	Carroll.
Johns, P. C	Nabb	Scott.
Johnson, D. B	Mooresville	Morgan.
Johnson, Frank P	Indianapolis	Marion.
Johnson, Sylvester	Indianapolis	Marion.
Jones, William M	Fairmount	Grant.
Kanouse, Mrs. Virginia F	South Bend	St. Joseph.
Kemp, Harry G	Winchester	Randolph.
King, Chris	Rushville	Rush.
Kingsbury, J. G	Indianapolis	Marion.
Kline, Oliver	Huntington	Huntington.
Kline, Slate	Logansport	Cass.
Klingel, Rev. Clement	St. Anthony	Dubois.
Knaub, Ben	North Vernon	Jennings.
Latta, W. C	Lafayette	Tippecanoe.
Lauman, Fred	Cold Springs	Dearborn.
Lawrence, Ellis	Indianapolis	Marion.
Leaming, Henry	Romney	Tippecanoe.
Leap, Charles	Laporte	Laporte.
Lee, Royal	Bridgeport	Marion.
Lewis, Mrs. Rachel	Fairmount	Grant.
Linke, J. A	Seymour	Jackson.
Lindley, C. N	Salem	Washington.
Listenfelt, J	Pennville	Jay.
Loudon, T. M. and wife	Salem	Washington.
Loveland, R. J	Peru	Miami.

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ANNUAL MEMBERS—Continued.

Name.	*Postoffice.*	*County.*
Macklin, I. N.	Bryant	Jay.
Markley, M. (D. D. S.)	Kimball, Nebraska.	
Martin, A. S.	Salem	Washington.
Martin, Dr. H. H.	Laporte	Laporte.
Martin, W. W.	Boonville	Warrick.
Mason, Dr. B. F.	Martinsville	Morgan.
Matthews, George	South Bend	St. Joseph.
Mathews, James F.	Michigan City	Laporte.
Maurer, A. J.	Lagrange	Lagrange.
McFarland, John and wife	Greencastle	Putnam.
Midkiff, C. C.	Knightstown	Henry.
Milburn, Henry H.	Bristol	Elkhart.
Milhous, Albert H.	Valley Mills	Marion.
Milhous, J. J.	Valley Mills	Marion.
Mills, J. W.	Lagrange	Lagrange.
Mock, Michael	Oaklandon	Marion.
Moffitt, Frank	Carmel	Hamilton.
Moore, C. B.	Monticello	White.
Moore, Mrs. Hattie	Greencastle	Putnam.
Moorhouse, John W.	Albion	Noble.
Morehouse, Jos. J. and wife	Lafayette	Tippecanoe.
Mort, J. H.	North Manchester	Wabash.
Moyer, G. N.	Laketon	Wabash.
Munson, Horace G.	Lincoln	Cass.
Mustard, Wm	Indianapolis	Marion.
National Fruit Grower, The	St. Joseph, Michigan.	
Netherton, Cecil	Winamac	Pulaski.
Newby, Albert E. and wife	Salem	Washington.
Newby, Thos. T. and wife	Carthage	Rush.
Newhouse, W. H.	Lawrence	Marion.
Newton, R. R.	Salem	Washington.
Niblack, Mason J.	Vincennes	Knox.
Nicar, Virginius	South Bend	St. Joseph.
Noble, J. M.	Sellersburg	Clark.
Norris, A. D.	Anderson	Madison.
Nyswander, John D.	Bridgeport	Marion.
O'Connor, T. W.	Monticello	White.
Ogg, R. A.	Greencastle	Putnam.
Oldfather, S. W.	North Manchester	Wabash.

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ANNUAL MEMBERS—Continued.

Name.	*Postoffice.*	*County.*
Osborne, C. C	Irvington	Marion.
Overman, Ed	Fairmount	Grant.
Parker, B. M	Knightstown	Henry.
Parker, Odin F. and wife	Salem	Washington.
Pfendler, D. C.	Acton	Marion.
Plass, H. and Sons	Decker	Knox.
Porter, S. F	Peru	Miami.
Price, Lewis	Lagrange	Lagrange.
Puckett, E. W	Ft. Wayne	Allen.
Ragan, Miss Belle	5802 Jackson Ave., Chicago, Ill.	
Rager, Albert	Laketon	Wabash.
Ratliff, Walter S	Richmond	Wayne.
Rawlins, C. B. and wife	Mooresville	Morgan.
Reed, W. C	Vincennes	Knox.
Reeder, Dr. David H	Laporte	Laporte.
Reid, Murdock & Co	Chicago, Ill.	
Reidel, John G	Madison	Jefferson.
Replogle, W. H	Hagerstown	Wayne.
Richards, M. W	W. Lafayette	Tippecanoe.
Ritterskamp, W. J	Princeton	Gibson.
Robison, Giles T	Greenwood	Johnson.
Roebuck, W. S	Ft. Wayne	Allen.
Romine, James A	Etna Green	Kosciusko.
Roy, J. H	Lagrange	Lagrange.
Royse, W. A	Indianapolis	Marion.
Schlotter, J. G	Indianapolis	Marion.
Schneider, Joseph	Lafayette	Tippecanoe.
Scholl, Jonas	Connersville	Fayette.
Schultze, E. A	Laurel	Franklin.
Seale, E. J	Fairmount	Grant.
Shaeffer, D. B	Lima	Lagrange.
Shick, C. A	Muncie	Delaware.
Shinkel, Lewis	Huntington	Huntington.
Shultz, Christian	Laporte	Laporte.
Shenefield, L. W	W. Lafayette	Tippecanoe.
Shocke, F. J	Salem	Washington.
Shoemaker, Arthur W	Daleville	Delaware.
Simpson, H. M	Vincennes	Knox.

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ANNUAL MEMBERS—Continued.

Name.	*Postoffice.*	*County.*
Smith, Ed R	Indianapolis	Marion.
Smith, Everett E	Muncie	Delaware.
Smith, Dr. Isaac	Warren	Huntington.
Smith, J. E	Muncie	Delaware.
Smith, Walter S	Indianapolis	Marion.
Smith, W. H	Madison	Jefferson.
Snodgrass, J	Kirklin	Clinton.
Stanley, P. J	Albion	Noble.
Stanton, Harry L	Laporte	Laporte.
Stemple, Milton	Indianapolis	Marion.
Stineman, Jonas	McGrawsville	Miami.
Stinger, B. F	Charlottesville	Hancock.
St. John, Ed. E	Salem	Washington.
Stout, H. M	Trafalgar	Johnson.
Stout, Wilbur	Mooresville	Morgan.
Stout, S. F	Peru	Miami.
Street, C. H. and wife	Lafayette	Tippecanoe.
Stumph, Walter and wife	Indianapolis	Marion.
Sutherland, Dr. O. L	Laporte	Laporte.
Swaim, H. H	South Bend	St. Joseph.
Swift, Evan	Franklin	Johnson.
Taggart, Joseph	Indianapolis	Marion.
Teagarden, Geo. W	Orleans	Orange.
Terry, W. C	New Ross	Montgomery.
Thomas, Shalter	Huntington	Huntington.
Thompson, Albert W. and wife	Salem	Washington.
Thompson, H. Greely	Salem	Washington.
Trinkle, J. W	Madison	Jefferson.
Troop, Prof. J	Lafayette	Tippecanoe.
Troth, R. A	Orleans	Orange.
Trueblood, J. D	W. Lafayette	Tippecanoe.
Trueblood, Luther T	Salem	Washington.
Trueblood, M. Abram	Anderson	Madison.
Tyron, F. N. and wife	Albion	Noble.
Vancleave, James W. and wife	Salem	Washington.
VanKirk, Miss Myrta	Lagrange	Lagrange.
VanKirk, R. E	Lagrange	Lagrange.
Vonnegut, W	Indianapolis	Marion.
Vreeland Chemical Co	Hudson Terminal Bldg., New York, N. Y.	

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ANNUAL MEMBERS—Continued.

Name.	*Postoffice.*	*County.*
Wallace, Frank	Indianapolis	Marion.
Waltman, Wm. M	Bean Blossom	Brown.
Walton, Wm. M., Jr	Laporte	Laporte.
Walton, Wm. M., Sr	Laporte	Laporte.
Warfel, Hiram	Muncie	Delaware.
Wellington, J. W	Lafayette	Tippecanoe.
West, James	Montpelier	Blackford.
Wheeler, Walter H	Indianapolis	Marion.
Whipps, Jas. and wife	Carlisle	Sullivan.
Whiteley, Howard A	Cambridge City	Wayne.
Whitesell, Wm	Dunkirk	Jay.
Whiteside, Frank	Lawrence	Marion.
Williams, S. T. S	Knightstown	Henry.
Woodbury, C. G	W. Lafayette	Tippecanoe.
Woolen, M. A	Indianapolis	Marion.
Wray, Marion	Lafayette	Tippecanoe.
Wright, E. H	Salem	Washington.
Yaple, Luther B	Foulke Blk., Chillicothe, Ohio.	
Yeager, Adrian	Farmersburg	Sullivan.
Yoder, Menno S	Shipshewana	Lagrange.
Zion, James M	Clarkshill	Tippecanoe.

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PROCEEDINGS

OF THE

FIFTIETH ANNUAL MEETING

OF THE

INDIANA HORTICULTURAL SOCIETY

The fiftieth annual meeting of the Indiana Horticultural Society was held in rooms 11 and 12, State House, Indianapolis, Ind., on December 7 and 8, 1910.

After an invocation by Mr. Smith, the following committee on President's Address was appointed: Messrs. D. B. Johnson, H. M. Stout and L. B. Custer.

The Vice-President, Mr. J. C. Grossman, was then called to the chair and the Society heard the President's annual address.

PRESIDENT'S ADDRESS.

Mr. C. N. LINDLEY, Salem, Ind.

Members of the Indiana Horticultural Society, Ladies and Gentlemen—We have come together today to talk over the past, present and future conditions of fruit growing in Indiana. As we stand today at the fiftieth milestone, our hearts are made tender by the memories of those grand and noble men who saw the need of a society of this kind where fruit growers could bring together their common interests and by exchange of ideas arrive at conclusions to their common good. Surely there can be no truer type of man than he who endeavors to make the world better by his having lived in it; and tho' his walk in life be the humble one of pruning the vine and orchard or cultivating the lily or rose, we say, all honor to his memory!

Such were the motives of those who planned and carried out the organization of this Society in 1860. We are truly glad that two of the members who gathered together on that memorable day are yet with us. To Abraham Trueblood and E. Y. Teas, the only charter members living today, we owe a debt of gratitude for their faithfulness and untiring efforts in

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making this society of real practical value to the State of Indiana. Truly, "they builded better than they knew."

There never was a brighter prospect for the Indiana fruit grower than there is today. There never was a greater awakening along this line than there is today. Why? We are just now coming to a realization that Indiana has every requisite for the production of first-class fruit. We are surrounded by a large population of consumers, so the markets are here at our doors. Why should New York, Washington, Oregon and other States ship into Indiana two-thirds of the apples consumed within her borders? This is because we have been indifferent, yea, careless, to the business of fruit growing. But today we see that this indifference is fast passing away; we are confronted by facts and figures of profits made in growing apples; we see perfect fruit from the orchards of those who prune and spray which command fancy prices. So we are forced to the conclusion that land in fruits properly cared for, will bring in a greater financial profit than in any other crop.

THE YEAR 1910.

We presume that there have been very few years in the history of Indiana horticulturists that proved quite so trying as the one just passed. In the eary spring the prospect was for a bountiful crop of fruits over the entire State. April with her severe freezes changed these hopes to disappointment, as only small portions of the State escaped. The southern part, or about one-third the State, had a full crop of apples and medium crops of other fruits; while only a few sections of the remaining part of the State had a partial crop of apples and only a limited supply of other kinds of fruit.

THE EXPERIMENTAL ORCHARD.

The Experimental Orchard yielded quite a good lot of fruit the past year. As has been told us before by the superintendent, Mr. Burton, the large number of varieties which it contains makes it very difficult to market them at a profit. The total gross proceeds from the orchard this year were $579.50. The expense of marketing, $289.75, plus Mr. Burton's salary of $500, shows that the orchard is not self-supporting by $210.25 in this, a year of exceptionally good prices and heavy crop. Under our present State appropriation it is imperative that something be done with the orchard or the Society will have a deficit to meet. It is up to you to decide what is the best thing to do under present conditions.

STATE ENTOMOLOGIST.

Much valuable work has been done the past year by our State Entomologist. In his field work over the State a system of spraying experi-

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ments has demonstrated the value of lime sulphur as a summer spray. The inspection of apiaries and his endeavor to stamp out the peach yellows and other diseases of fruit trees, has made his services of much benefit to the fruit grower.

PURDUE UNIVERSITY.

The line of demonstration work and practical teaching that has been carried on by the Horticultural Extension Department of Purdue University the past year has undoubtedly inspired a greater horticultural spirit over the State. About 1200 persons attended the 11 meetings held this fall at some orchard in the community and we believe great good has resulted from these meetings. The Experimental Department of Horticulture at Purdue is getting on a solid basis, and under the present management we are getting much valuable help. The lectures given upon horticultural subjects at the Farmers' Short Course at Purdue, the second week in January each year, are another source of much profit to those desiring the most up-to-date methods of fruit growing.

FRUIT SHOWS.

Nothing so stimulates the production of a first-class article as an exhibition or a competitive show of that article. We believe the time is at hand when Indiana should hold a fruit show. The premiums should be liberal enough to stimulate the interest of the best fruit growers that their best efforts may be put into the enterprise. We believe the State Legislature could well afford to make a liberal appropriation for this purpose.

STATE APPROPRIATION.

The reduction of our annual appropriation to $600 has made it necessary to do away with our summer meeting, not having funds sufficient to hire speakers. This we regret, as our summer meetings have been a source of arousing much interest in the community in which they were held. We mention one out of many—our meeting held at Henryville in 1905, since which time many thousands of dollars worth of small fruit has been shipped from that vicinity yearly. We are in favor of an appropriation that will enable the Indiana Horticultural Society to continue to do effective work; that will enable us to pay our Secretary a sufficient salary to justify him in organizing local societies in every county in the State; then will the horticultural interests of Indiana be developed as they should be, because it is through organized effort that the greatest good can come.

When Gifford Pinchot, the leader of the conservation movement, was traveling through this State recently he spoke of the neglected condition of our orchards in an address before the citizens of Indianapolis. It is a

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criticism that we know we fully deserve. Let us awaken and correct this regrettable condition. Indiana should rank high in the scale of production of A No. 1 fruits. Is it not the great object of the Horticultural Society to help promote and disseminate horticultural knowledge? Can we not put forth greater efforts to bring about conditions that will reflect credit instead of criticism? We believe in a future for the Indiana Horticultural Society. With a paying membership that has increased 300 per cent. the past year, we feel that we are not standing still, but are on the "forward march." Let us resolve as a fitting celebration of our fiftieth anniversary that a new zeal shall come upon us; that now, as in the first year of its organization, there is still much to be accomplished. May the Indiana Horticultural Society stand for zeal, push, energy, hustle, better fruit and big profits.

HOW MANY TIMES SHALL WE SPRAY THE APPLE FOR CODLING MOTH AND CURCULIO? AN INDICATION FROM RECENT EXPERIENCE.

D. B. JOHNSON, Mooresville, Ind.

Mr. President, Ladies and Gentlemen: This subject of spraying is an old one and I am a new man as far as experience is concerned and feel a little hesitancy in talking about spraying, and yet I believe that there is still too much ignorance on the importance of the thorough spraying of the orchard, yet if I am only able to emphasize a few points so that more people will spray their orchards and do it better than before, probably the object for which I was appointed will be attained. The subject is, How many times shall we spray for curculio and codling moth? In taking up this subject I have studied the life history of the curculio and codling moth in order to learn its habits and all about it. I believe and am thoroughly convinced that, when we talk about spraying for any kind of insect, a thorough spraying is necessary. I am satisfied that there is more careless spraying than ought to be. A great many people are spraying and think they are doing a good job and a few days afterward they find they only touched in a few places and other places were just as bad as before. I went into the fruit business because I thought that by taking good care of my orchard I could produce an apple which my neighbor, who did not spray his trees, would have to buy of me.

In taking up the curculio, I did not know much about it, but a year or two ago we found our plums were bad, and they said it was plum curculio. Later on we found that something of the same kind of an animal was attacking the apple and I presume it is the same insect. The curculio hibernates in the winter and comes out in the warm days of spring

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and is ready for business. From some of the experiment stations we learn that Mr. Curculio has to have something to eat before the apples arrive and the conclusions are that he begins to feed on the tender leaves before the apples come. We have been in the habit of spraying our trees one time before they bloom, and after reading the item in regard to the curculio, we thought if that were true we would get hold of Mr. Curculio before he did the damage. We used arsenate of lead and we believe that is one of our reasons for success. Another feature is, we concluded that if it paid to spray at all it pays to spray well. We have been a little liberal with Bordeaux mixture. It doesn't cost much. Instead of making a fog spray we concluded that, if the spray was any benefit at all, it must get on to the leaf, and we wet the tree all over and we were pretty sure that if there were any curculio around they would get the dose. We put about 1½ pounds arsenate of lead to 50 gallons of Bordeaux mixture. We use hydrated lime, as it does not hurt the tree. After the curculio comes it generally feeds on the apple and I am satisfied that the first spraying with arsenate of lead before the blooms come has been very valuable to us. For the codling moth, which does not put in an appearance until later on, we spray one time, after the petals have fallen off, and make the same proportion that we did for the curculio. We use 1½ pounds of arsenate of lead to 50 gallons of Bordeaux mixture and put it on very heavy. We used a Friend nozzle this year. We use the Bordeaux mixture with lead arsenate very heavy for the codling moth. We want to wet the entire tree. I have this idea about the codling moth: We don't want any second brood. If we get the trees well sprayed, we won't have many of the second brood.

Taking the apple orchard in connection with farm work, it is hard to find time to spray two or three times, but we do take the time the first time. We have experimented as to whether three sprayings are better than one. Prof. Woodbury made the directions and we carried them out. We made one spraying on one row and three on another and the result is, as you will see. Where we sprayed three times, we had only 18 per cent. of apples that were affected by curculio and 1 per cent. that were affected by codling moth, and 82 per cent. free. On the one spraying we had, curculio, 20 per cent. affected; codling moth, 1 per cent., and free, 80 per cent. Where there was no spraying we had, curculio, 75 per cent.; codling moth, 9 per cent., and free, 22 per cent. We have no iron-clad rules laid down, but the point is, that if we only give one spraying, give a good one. I do not think it necessary to use a very high per cent. of arsenate of lead. We shall only spray once for curculio and codling moth hereafter. We will spray before the bloom comes out and catch the beetles that are feeding on the leaves and then after the petals have fallen, we will spray

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again. We think possibly that next year we will use lime sulphur instead of Bordeaux mixture. This year a few leaves were affected and I saw a good many yellow leaves and I imagine that they were affected with the Bordeaux mixture. A little more emphasis on the one spraying proposition, because I think that that one thing is where we make our failure. If we undertake to make a fog on a day that we have any wind, it is hard to make it settle where we would like to have it, but with a good heavy pressure and a good nozzle you can almost always spray even if there is considerable wind. We shall spray when the time comes if we have to do it against the wind and we will be sure to cover the entire tree. I don't think it possible to do as good a job with a mist spary as with a heavy pressure. Of course it doesn't take so much for a small tree.

DISCUSSION.

Mr. Goble—We are interested in doing as effective spraying as we can. Last February we addressed a number of letters to fruit growers of Indiana and Missouri asking this question: "Will the spray for the scale with lime and sulphur combined answer for the first codling moth spray?" The answers we had to these questions prompted us to leave off the first spray for codling moth. We gave a good spray with lime and sulphur combined, using the ready prepared mixture, in the latter part of March; then when our trees bloomed they were frozen so hard that we thought it not worth while at all, but finally took courage and gave a good thorough spraying for moth, using arsenate of lead and Bordeaux mixture. Later, on a portion of the trees we sprayed the second time with the same mixture. We did that, feeling that we were completely frozen out, but to our surprise we harvested this fall about 2,500 bushels of as fine apples as were ever produced, free from codling moth and curculio. The question now is whether it is safe to take that as a criterion and continue to use the lime and sulphur in the spring and omit Bordeaux mixture and arsenate of lead until after the blooms fall.

Mr. Johnson—The one point is that we made the one spray before the bloom, to take care of the curculio.

Mr. Goble—Our spray was made before a young leaf was there, but we covered every twig, as we knew we had scale and were after them.

Mr. Smith—Are you sure that the curculio crawls up the body of the trees?

Mr. Johnson—I don't know.

Mr. Swaim—My experience with the curculio is that when he is cold, early in the morning or on cool days, he will crawl, but when he gets warm he will fly.

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Prof. Troop—In answer to that question I will say that I had my students see whether the curculio would fly from one tree to another. They go into the ground right under the tree and in order to test whether they would go back ino that tree or go to other trees the students placed under the branches mosquito netting so when they came out of the ground if they went into the tree they would catch them, and they found that those trees that were protected in that way had fully as many curculio in them as those that were not protected at all, showing that they will fly from other trees in the orchard just as easily as they could in trees they are working on.

Mr. Douglass—I would be interested to know whether or not this experiment involved the apple curculio alone or whether other curculio was included.

Mr. Johnson—I think the authorities claim they are about the same.

Prof. Woodbury—The curculio most prevalent in Mr. Johnson's orchard was the plum curculio.

Mr. Douglass—the reason I was interested was that we have had trouble with the apple curculio and I wondered if we could get any assistance.

Mr. Johnson—The Illinois Experiment Station carried on a very extensive experiment in Illinois and the results showed that where they sprayed early, it had much to do with destroying the apple curculio.

Prof. Woodbury—One word of comment on the results of the experiment in Mr. Johnson's orchard. According to these results there were 20 per cent. of apples infested with curculio following the one spray, 18 per cent. infested following three sprayings and 75 per cent. infested following no spray at all. Now whether it will be found later on that we should spray once or twice remains to be seen. This is not a final judgment, as we have here the results from only a single season's work.

Mr. Fuller—I want to ask about spraying for the second brood of codling moth. We sprayed thoroughly twice—immediately after the petals fell, and then immediately after that. We found in July traces of a second brood and we found in harvesting that a very few had gotten into the apples. Could our apples have been infested from the other trees?

Prof. Troop—The second brood most assuredly are those that come from the first brood. They come out and then are ready for attacks on the apple again. That came from the fact that you did not spray all your trees.

Question: How far will they go from one orchard to another?

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Prof. Troop—I do not know.

Mr. Smith—How do the codling moth larvae get out of the apple to get into the second brood?

Prof. Troop—They eat their way out.

Mr. Munson—I should like to ask Mr. Johnson whether he found all varieties of apples affected by curculio. I have only 40 or 50 trees and I never found any apples on the ground except under the Duchess of Oldenburg. Some years nearly all the apples fall off but I never find any other variety except that affected with curculio. I will drop that variety out rather than spray the whole orchard. Are the damages on all varieties alike? I know the curculio fly. Some one said that they fly like the Colorado potato beetle. If they get on the lower branches they will crawl on up.

Secretary's Note: We have no data at hand on varying susceptibility to curculio attack of different varieties of apple.

GROWING TOMATOES FOR THE CANNING FACTORY.

C. C. Osborne, Irvington, Ind.

Mr. President, Ladies and Gentlemen: Sandy or clay loam is ideal for growing tomatoes. Barnyard manure scattered broadcast over the field in winter is best for a fertilizer. Next best is commercial fertilizer, applied at the rate of about 500 pounds per acre, applied in the hill before setting the plants. Plow the ground early and harrow two or three times in order to make the soil firm. You cannot expect to put the plants in loose soil and have them do well.

In order to have a crop of tomatoes we have to have plants. To have plants we should grow three times as many as we expect to use. This is an insurance, and by growing three times as many as you want, you can generally sell some. Plants bring up the question of seed. Generally we plant the seed the canner gives us or those we buy at the seed store. If the tomato grower would select the seed as the corn grower does, he would have better results. If he would go through the field and pick the best fruit from the best vines and then save the seed and continue this a few years, he would see what the results would be. It is a small matter to have seed for 10 or 15 acres. After selecting seed fruit, they can be taken and held with the stem end down into a jar and squeeze them and save all those left in the hand. Allow them to stand until fermentation takes place and the seeds in the bottom can be rinsed three or four times until you have the best seed. I have no fault to find with our seedsmen, but I know this method is an improvement over the methods used by many of our

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successful growers. As to the best methods of growing plants, it is not fully settled. One of the best methods is to take part sand and well rotted manure and place them in a good place, well sheltered from the wind. By thorough and frequent cultivation you can hasten the growth and you will have an ideal plant.

Setting.—In setting tomato plants many people ask about the kind of weather. Set your plants when they are ready unless the ground is frozen. The ground will surely take care of itself. It is hard to water the plants unless you use a machine. With repeated experiments it has been found not worth while to water tomatoes. There are several successful machines for setting tomatoes. There are many times they cannot be used on account of the wetness of the soil. It is hard to set plants so they can be worked both ways. One lively boy can drop plants for a dozen men. By setting tomatoes the short way and allowing men to be at either side of the field, the work can be carried on very rapidly.

Cultivation.—Immediately after the plants straighten up they should be cultivated both ways. Toward the latter part of the season we find the gopher blade very good for cultivation. By using these the cultivation is shallow and by this time the roots are spread out between the stems of the plants.

Insects.—For potato beetles which bother us early in the spring, spraying with arsenate of lead or Paris Green is considered very successful. For cutworms, late planting is the most successful method. There are a great many ways of combating the cutworm, but it takes a great deal of labor, which hardly pays. There are two broods of tomato worms. The first is not so serious as it comes when the tomato is small. For the second brood this method cannot be used owing to the size of the fruit at this season. In handling this pest one of the best methods is to encourage blackbirds or keep turkeys, which destroy worms. In going over them by hand, a sharp stick will be found better than shears.

When it comes to harvesting, the crop rows should be laid out according to the size of the crop. In doing this the center row should be laid in so they won't fall out in the way of the horses' feet and the vines on the outside should be picked up so the horses can walk around and not tramp on the fruit. At the corners where the team turns, the plants which would be run over by the horse's feet can be pulled up and laid over the other vines and the fruit can go into the factory with the rest. The wagons pass along with the crates and the pickers fill them and they are stacked one above the other. I wish I could show you a drawing of the best wagon. The bottom of the bed should be solid and the wagon should be coupled short. This bed should be 10 to 12 feet long, making the side of the bed slope toward the center about four inches. Then by having a

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standard at either end of the wagon there is no need of anything to hold the crates on. This makes ease in loading and unloading. Springs should always be used in hauling tomatoes. Generally tomatoes are picked by contract. A man and his family will contract to pick at a certain price. Usually a half cent per bushel is kept back until the end of the season. Most of the failures in tomato growing are due to neglect. If the tomato grower would give the attention to details as he does to corn, wheat, etc., and would study the crop, he would be more successful. A man should grow enough acreage so that he will give his attention to the crop and by giving attention to details and making a study of it, he not only finds it easier to get his tomatoes picked but has more money and has more self-respect in growing his crop.

DISCUSSION.

Mr. Zion—In our neighborhood there is quite a conflict between the growers and canning people. The general opinion is that they cannot grow tomatoes for less than $10.00 per ton. What is a fair price?

Mr. Osborne—I hardly think it is fair to ask that question of me. Since I have been in the tomato business I have always said that when factories can pay $10.00 per ton, I would grow them myself. The canner does not appeal to the intelligence of the grower as he should. Generally he passes out the seed without mentioning the variety. I think $10.00 pet ton is none too much, but at that price it can be made profitable.

Mr. Johnson—I would like to know what is the proper size of plants for setting?

Mr. Osborne—I consider the ideal size six to eight inches with the stem about the size of a pencil.

Mr. Whitely—Will spraying of the plants in the bed be sufficient?

Mr. Osborne—Not so strong as for potatoes. That is successful.

Mr. Arlow—I have had some little acquaintance with the tomato proposition. I am well pleased with what the gentleman said. I would have been disappointed if I agreed on every point. I understood him to say that he would use a wagon bed which slopes in. Get that out of your mind! I have had some experience in handling tomatoes; I have been devoting practically all of my wits, and that is not much, to that one line of business and I am purely and wholly and solely a farmer but I have turned my attention wholly and solely to the tomato cause. I love money. Yes, we can grow them at $7.00 and $8.00 a ton and do well. I have had some corn experience and some with tomatoes. At $6.50 per ton we made over $100.00 per acre. The factories are paying $7.00 to $8.00 per ton and you

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can well afford to grow tomatoes and you can get 10, 15 and 16 tons per acre if you take the advice of the gentleman who talked to you. The failure in tomatoes is the failure in putting them out and cultivating them. I have known men to have fine patches of tomatoes and at one single cultivation destroy them by close, deep plowing. We as farmers, aim to have the tomato take care of itself and it will come as near doing it as anything but they must have some help. You leave it till the last thing and take care of the tomato when you have nothing else to do. On the wagon bed question, the best bed you can make is a level bed 16 feet long and on the outside just run a 1 x 3 inch board on each side and then you can load a good large load of tomatoes. With two horses I can put on 100 bushels and haul them to the scales. The less you shake the tomatoes the better they are, so a man can load a load himself and have no trouble at all. I have learned this by experience. I came here to learn something and want to go home wiser than when I came. If you can get the price that has been offered, don't grow any corn. Growing corn impoverishes the ground and growing tomatoes improves it.

Secretary's Note: The statement is sometimes made that tomatoes have the power of adding nitrogen to the soil as clover does. This is a mistaken idea—while tomatoes are heavy feeders, the cultivation they receive often so improves the physical condition of the soil that the next crop does better than it would if following grain.

Member—I think the seed is a very important part of the crop. If you have seed of all kinds you have mixed tomatoes, and there is nothing that will give you a good crop like good seed. The better way is to buy good seed from some reliable grower, grade them by themselves and then select seed for yourself. If you depend on the canner, you will go down in spite of yourself. You want to manure your ground well and have the ground firm before you set out your plants. Transplanted plants will stand the dry weather better. Never cultivate too deep. Cultivate the vines, but not too deeply. A tomato will not stand being handled if the ground is wet. Do not plow when the dew is on them.

Mr. Osborne—In regard to the bed for handling tomatoes, I will admit that you can place them on a feather bed and haul them with less trouble than on a wagon. I know in handling them in quantities the bed I described is the bed to haul tomatoes to the factory. I advise you to use the bed I describe.

Mr. Smith—What is your objection to the level bed?

Mr. Osborne—You have to lift over the sideboard, and the board would not keep them from slipping off. The sloping bed will hold the crates on.

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Mr. Sid Conger—I have grown tomatoes for the factory and have tried to run factories. If you pile them up high, you have to have so many boxes. I like the longer bed. You can't pile so many on top of each other. I signed up for 60 acres of stuff for the factory yesterday. Don't raise so many tomatoes, and raise some sweet corn, peas and other things.

Mr. Biliter—Does hauling of tomatoes injure the tomatoes?

Mr. Osborne—Yes. Always use springs on the wagon.

Mr. Arlow—Always haul with springs. First you have the benefit to the tomato, and second, because you can haul 20 bushels more than you can without them.

Mr. Swaim—Is there any advantage in controlling the tomato worm in protecting those that are infested with parasites?

Mr. Osborne—I have observed that closely on a large acreage, and there was a time when the second brood was causing us a great deal of trouble. I never allow men to kill the infested worm because the parasites will take care of them. If you will take them in a glass case you will see a small fly. Always take care of them because they will do you more good than blackbirds and they will save the worming of tomatoes.

Mr. Roebuck—I do not know that I can say anything of particular interest to tomato growers on a large scale, but to those who have land suitable, I will say that I find that I can almost double my crop by watering it. I also find that it pays to start them as rapidly as possible and it will be best to water them when you start them. I water everything that I set out, as I find it pays to do so. I like to set out tomato plants and pour water around them and then put the earth around them and they will start right off. Plants will start much more rapidly if they are watered.

Prof. Woodbury—As to transplanting, I will say that at Purdue we had a little experiment and transplanted three times. Those that were transplanted twice before setting in the field yielded at the rate of 9.89 tons per acre; the plants that were transplanted once gave 8.38 tons per acre, while the field-grown plants made only 3.22. Those grown in the hotbed and set from there direct in the field yielded at the rate of 5.95 tons per acre.

Mr. Van Camp—I would like to know how to produce good plants. There has been a great deal said, but the main feature in getting a tomato crop is in getting big plants. No one has explained how to grow the plants or how and when to transplant them.

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Mr. Osborne—Our rule is that about the time the third leaf comes out we transplant them. About three inches in the row and two inches apart. The second transplanting about six inches apart. Do not let the transplanting go too long. Be sure and pack the ground well around the roots. The making of the plant and raising good seed is the main thing in growing tomatoes. As for commercial fertilizer it is all right. If your ground is not strong enough to make a crop, I don't think there is anything in the fertilizer. You want a soil that is rich enough to produce them. Put the fertilizer on in the fall with a manure spreader. As for plowing, do not plow too deep any time. Get your plants in such shape that they will hold the bloom and mature the fruit. I still stand for transplanting. The tomato wants age before it will stay on the plant.

SEASONAL NOTES FROM SOME OF THE MEN WHO GENERALLY GET THE PREMIUMS.—THREE-MINUTE TALKS ON INDIVIDUAL METHODS, LOCAL CONDITIONS, FEELINGS AND PROSPECTS CONCERNING THINGS HORTICULTURAL.

OUR METHOD OF APPLE GROWING AND SOME OF OUR SUCCESSES AND FAILURES.

CHESTER BEAVER, Glenwood.

My remarks deal with two family orchards set out by my father about twenty-five years ago. His first act, that of ordering the trees, was a failure, for instead of the fine varieties that he expected to see when the trees began to bear, quite a large number of them were Hyslop crabs and two or three varieties quite as worthless. This failure made it necessary to resort to top-grafting, and by doing this some of these same trees are bearing our finest specimens of Grimes, King, Bellflower and Gilliflower.

The two orchards contain 153 trees, 35 of which are replants of various ages, too young to bear a paying crop. After the first few years of cultivating the ground it was seeded to grass and the trees left to nature's care until about eight years ago when we saw that if we had enough fruit for our own use we would have to spray. This first effort was also a failure so far as better fruit goes. We hired a professional who came with a one-horse wagon, a bucket of blue vitrol, another one of lime, a little iron pump with three feet of rubber hose. He mixed his material, sprinkled the trees sparingly, received his pay and was gone. We had our first heavy crop that year and almost every apple had a worm in it. The sprinkling had done no good. We next went into partnership with a

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neighbor and bought a cheap outfit with which we began our fight against the codling moth and apple scab. We used it with some success until we learned that we needed more power, more hose and longer extension rods, then we sold it and got another barrel pump with two hose ten feet long, two bamboo rods ten and twelve feet long, placed it on a low down wagon with an eight foot elevated tower for one man to stand on, and by vigorous pumping and thoroughly soaking the trees with three or four sprayings during the season we were able to produce a large per cent. of perfect fruit. For the first few years we made our spray mixture, but trouble in mixing and applying the home-made Bordeaux got us to using Bowkers' Pyrox and Disparene, which we have used with good results for the last four or five years. About the time we were prepared to fight the codling moth and apple scab we noticed the scurfy bark louse, and while we were finding out what it was and what to for it, it had killed a few of the small trees and many limbs on the larger ones. We began the lime sulphur treatment in the fall and succeeded in cleaning the trees of the most of them, but we have always left enough of them some place for the next-year brood, so we have been spraying regularly with lime and sulphur every fall or early in the spring.

Perhaps the greatest failure financially is that of controlling the Bitter Rot, for on two occasions it has attacked the Snow, Greening, and Vandiver, destroying the whole crop of these varieties and spreading it to other trees near them. We had prepared to use the summer solution of lime-sulphur the past season for this disease, but the late freezes last spring so thoroughly stripped our trees of fruit that we sprayed only once. The last two seasons we have used a gasoline power outfit which is very satisfactory. We can do the work no better but can do it faster. We use an average of about five gallons of spray to a tree, applied through double and triple Vermorel nozzles at about 120 pounds pressure which reduces it to a very fine mist. We follow the system of mulching our trees with straw, which preserves moisture for the trees and also saves the dropped apples from being cut and bruised.

We believe in early picking; believing that it helps in producing a good crop every year by turning the strength of the tree, which would naturally go to ripening the fruit, into fruit buds for the next year.

In picking we use baskets and empty carefully into bushel crates, which we haul on a spring wagon to the packing shed; this gives us a dry place to work in while barreling and a comparatively even temperature to store the apples in until we dispose of them. We have been able to sell most of our apples at home, but when the demand is not equal to the supply we either ship to or sell direct to the Indianapolis commission men.

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We have not kept strict account of every bushel produced or sold, but the accounts for four years are:

1906—200 bushels	$250 00
1907—500 bushels	650 00
1908—250 bushels	375 00
1909—750 bushels	950 00

This does not include what was used by our three families, many bushels which were evaporated or made into cider, and several dollars in premiums at the state and county fairs and the annual shows of the society here and at Lafayette.

R. L. Beck, Liberty, Ind.

Mr. President and Members of the Society: Had the State Board of Agriculture given a premium for the largest orchard that produced the least amount of fruit the past season, I surely would have won the blue ribbon. From about 40 acres of peach and apple orchards of which probably 20 acres are in bearing, a bushel box would have held the entire crop. We had an abundance of bloom on nearly all the trees. In April, after most of the bloom had fallen, we fired up the steam spraying outfit and sprayed a part of one orchard when rain put a stop to our work. And the freeze of April 23d and 24th put us out of the fruit business for this year at least. But I am not ready to say quit yet. In fact I have such faith in the future as to build a two-story fruit house 30 x 40 feet this year, and to show you that I am not a "quitter" I have almost 500 apple trees to plant out next season.

I am proud of the fact that Union County is the birthplace of two most honorable members of this society. Of the two charter members who alone are left of those who were present at the birth of our society, one, Mr. E. Y. Teas of Centerville, was born in the little village of Quakertown near the banks of White Water river, only three miles from where I am located. I would not be surprised to learn that Mr. Teas did some grafting before he left Quakertown for just north of the village is a living curiosity. Two sycamore trees which stand probably ten feet apart are connected by a limb six or eight inches in diameter. The other member whom I have spoken of whom this society honors highly, Mr. Sylvester Johnson of Irvington, was born in our county the year before the county was organized.

The prices received for our fruit crop of 1909 were most satisfactory, especially for early apples and peaches, receiving $2.00 per bushel for the Yellow Transparents from the Connersville grocers, the highest price we ever received.

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MR. H. M. STOUT, Trafalgar.

We try to grow everything that will be found in an up-to-date Garden of Eden. We use all we can and sell what we don't use. I will speak of pears. We have a soil of sugar tree and clay. On this we find we can produce large crops of pears annually of the finest quality. We cultivate until they begin bearing and if they begin to blight we stop cultivation. We begin the season with a variety of Wilder; next Koonce. Closely following is the Bartlett, Sheldon, Seckle and Warden Seckle. Of the winter pears we have Lawrence, Winter Nellis and Kieffer. We find the trouble with pears is that they have to be marketed early. We find it is easy to find a market for pears even in country districts. While we have good shipping facilities, we have good home trade for most everything that can be raised. This year there are not more than half enough apples to supply the demand. The orchards are apparently pretty good, but people are getting discouraged at the lack of bearing. For several years the bearing has been freakish. Other places where conditions are ideal, they are without fruit. There are some things we cannot understand.

MR. OMER ABRAHAM, Martinsville, Ind.

We cannot grow apples without trees and the mice and rabbits sometimes eat them up. I will show you a tree protector. It is common wire cloth. Take about 12 inches of this wire cloth and bend it around. Slip it on to the tree and the mice or rabbits that get through it will have a job. A professor told us that in one case they sunk it down in the loose dirt and it froze down solid and cut the bark of the trees, so it won't do to put it into the ground too deep. I have won several premiums, but we cannot win premiums without spraying the tree and thinning. Our experience has been that unless you thoroughly drench the tree, the second brood of codling moth will get in where two apples come together. They may only go through the rind but it will make a spot where the apple will decay. That is why we do not like apples that hang more than one in a place. Where two grow together you can hardly get the arsenate of lead on both of them. If you would produce premium winning apples, do not have them too thick or they will not have the size.

Mr. Douglas—There is one thing you have to remember in using these solutions. Any insect that comes under a bubble will not be affected by it. The thing we recommend in the planting of nursery stock is not to plant anything that has any evidence of woolly aphis at all. In inspecting the nurseries of the State we attempt to locate all these things but the woolly aphis works under the ground and the inspectors will often pass over it and not see it at all. We have to depend on the integrity of the

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nurserymen. Any time you buy any trees that are infested by these things, let us know and don't pay for the trees.

Mr. Abraham—You will sometimes notice on the southwest side a sun scald. The sun shines on the tree and it loosens the bark and at night it freezes up again and that continued freezing and thawing destroys the bark. The sun seems to travel more rapidly in the winter than the summer and the shadow of this wire will keep from the sun scald. About the second brood of codling moth, if you depend on not spraying the second time, be sure that they are drenched thoroughly so as to get the second brood.

MR. W. B. FLICK, Lawrence, Ind.

I do not know anything new. I suppose I am a pioneer in this society, starting in in 1883 and have been learning something every year. The last year I have been experimenting as to a substitute for Bordeaux mixture. Bordeaux mixture is objectionable as it russets the fruit. The fruit does not keep as well in cold storage, so a substitute is needed. Lime and sulphur in dilute form is highly recommended and has been experimented with on a wide range and so far is a success. In my orchard I sprayed one row with lime and sulphur for San Jose scale then afterward when the blossoms had fallen I used a diluted solution of 1 to 25, 1 to 30 and 1 to 35. On the other rows of the orchard I used Bordeaux mixture as usual. I sprayed before the bloom, immediately afterward and then two weeks after the petals had fallen. I used arsenate of lead in the proportion of three pounds to fifty gallons of water. My method is to drench the trees. I think that will be a substitute for Bordeaux mixture and would recommend everyone to try it. The fruit remains glossy. Some of the fruit here is said to be rubbed. An apple is naturally greasy and of a glossy appearance and the lime and sulphur preserves it. As to the codling moth, if you have orchards within a half mile or more and they are on the trees, you will surely have a second brood and you had better spray for the second brood. The matter of destroying entirely the San Jose scale in an old orchard I think is not possible. With the use of lime and sulphur you will always have them with you to some extent. I have used it thoroughly and still have some scale.

MR. S. A. HAZELETT, Greencastle, Ind.

There are a number of members of this society no doubt, that are more competent to talk on the given subject than I. I do not claim to be as thorough in fruit growing as one should be to get the best results. I do not cultivate, do not prune as often as I should, do not spray so

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thoroughly nor so often as those do that get the best crops. However, I think I do better along those lines than any of my neighbors, with one or two exceptions. I fertilize my best variety of bearing trees with all the stable manure I can get. I prune, I have sprayed with Bordeaux and Paris Green more or less every year for ten or eleven years and with lime and sulphur and arsenate of lead the last years. I have had some excellent crops in that time and have had some bad failures. On one or two occasions have had good crops when other orchards failed. I have never had an entire failure in fourteen years until this year. The beautiful and abnormal condition of the weather in March was the forerunner of dire disaster later on. It brought forth the season some three weeks earlier than normal. The fruit trees of all kinds were loaded with the most healthy and perfect bloom, until the night of the 22d and the day of the 23rd of April when the continued temperature for 36 hours of from 32° down to 26° above zero wiped out our grand prospects for a bountiful crop in our locality with one exception, and that was a small orchard owned by John McFarland, containing about five acres lying in between the Big Four and Monon railroads within a few hundred feet of either road. Mr. McFarland's orchard produced a fair crop of apples. His Grimes were good, his Ben Davis and Wealthy were fair, his entire crop netting him over one thousand dollars. This orchard needs especial mention from the fact that it was the only orchard in this section that produced any fruit worth mentioning. Mr. McFarland keeps his fruit trees well pruned and fairly well sprayed. Three years ago he covered his orchard with several hundred loads of stable manure and this season he gave it a thorough spraying with lime and sulphur and arsenate of lead. He also made fires and smudges under his trees previous to and during April 23d, but these fires which were made out of old limbs, wet stalks and straw, were made especially near and for the benefit of the Yellow Transparents and Salome which varieties were almost an entire failure, the Yellow Transparent producing about $20.00 worth of fruit when two years ago the same trees produced three hundred and fifty dollars' worth, the number being 19. Now the question arises why did Mr. McFarland's orchard produce so well when all other orchards in his neighborhood failed? He himself says he cannot see how his fires could have done good. The Grimes were north of the smudge and there was a strong wind from the north all day, but in the night of April 22d it changed to the south wind with a slight rise in temperature. His Grimes were fine and some trees produced all they could bear, especially on the lower limbs, while other trees bore but very few. Likewise the Ben Davis were not well located to get the benefit of the fires, but were the next heaviest producers. Mr. McFarland himself, while having serious doubts as to the benefits produced

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by his fires owing to the adverse conditions of the wind and weather, will provide himself at once with approved orchard heaters and be prepared for an emergency like last spring. It has been thought by some that the smoke from the Big Four engines which lies about a hundred yards from his orchard north, might have been the benefactor in this instance.

My own troubles are, I have too many acres in orchard (about 45) and too many of the cheaper varieties, and too many varieties that are not profitable producers now and never have been, to fertilize, prune, spray, thin, etc., as it should be done.

If I were to set out a new orchard I think I could do better. It would not be over one-fourth as large; it would not have over one-fourth the varieties that I now have. It would be pruned every year; it would be cultivated until it was five or six years old with some crop that would not exhaust the soil of its fertility and humus.

While I have made money on my orchard, and have taken a great many premiums at State Fairs and Horticultural meetings, yet within the last few years some worthy gentlemen of Indiana with small orchards and intensive cultivation, have stepped in and swiped the platter of premiums and I feel that I am down and out unless I do better in the future.

THE FARMER'S ORCHARD: BEING A BIT OF PERSONAL HISTORY.

F. J. Heacock, Salem, Ind.

I would like to place some figures before you to save your time in listening.

The orchard to which I shall refer this afternoon is a farmer's orchard. I realize that there are farmers in our section of Indiana who believe that a farmer should not grow apples. This orchard was planted, not with the purpose of supplying apples commercially, but primarily for the purpose of supplying apples for the home. The orchard was planted in 1886. The varieties were selected by reference to nurserymen or their agents. You will see that there are some that would better have been left out. I always like to know something about what the work on a farm is. I think we need to know something. For that reason I want to find out whether it has paid and what varieties have paid best, and what might have been omitted. The yield for this year and the value of the crop is on the sheet before you.

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VARIETIES.	Number. Trees.	Yield in 1910, with Selling Price.		Total Yield Since Trees Began to Bear with Total Returns.	
		Yield, Bushels.	Value.	Yield, Bushels.	Value.
Yellow Transparent	1	7	$5 77	50	$40 00
Early Harvest	1	4	3 60	20	18 00
Red Astrachan	1	2	1 50	20	12 00
Golden Sweet	1	12	9 60	75	45 00
Maidens Blush	1	7	6 25	20	18 00
Fall Wine	1	6	4 92	25	22 50
Newton Pippin	1	1	1 00	15	12 00
Nickajack	1	1	1 00	10	5 00
White Pippin	1	6	6 50	20	16 00
Haas	1	12	7 37	35	24 50
Big Romanite	1	31	21 18	55	38 00
Winesap	2	21	21 25	105	113 50
Stark	2	18	10 60	60	34 00
Tetofsky	1	10	11 25	20	16 25
Rome Beauty	6	121	128 30	295	298 00
Missouri Pippin	2	22	14 30	95	66 50
Willow Twig	1	4	4 50	10	8 00
Lansingburg	1	10	10 75	35	28 50
Moores Sweet	1	2	1 75	15	9 00
Janet	5	42	28 50	185	148 00
Grimes Golden	6	112	119 00	370	419 00
Gilpin	3	24	26 90	60	56 00
Milam	2	6	4 35	20	10 00
Lawver	1	4	2 65	25	10 00
Ben Davis	6	79	72 39	215	172 00

COST AND RETURNS.

YEAR.	Yield, Bushels.	Value.	Spraying.	Pruning and Mowing.	Picking and Marketing.	Interest and Taxes $10.00 per Year. Total Cost.	Net Gain.
1904	120	$87 96	$17 84	$2 40	$7 50	$37 74	$50 22
1905	240	205 50	16 34	3 00	14 24	43 58	161 92
1906	250	207 96	19 90	2 54	18 24	50 68	157 28
1907	180	160 84	3 84	3 00	7 50	24 34	136 50
1908	142	142 44	13 50	2 30	7 94	33 74	108 70
1909	227	260 95	21 25	5 00	17 70	53 95	207 00
1910	564	528 18	18 10	7 50	76 70	112 30	412 88
Average	246	$227 20	$15 82	$3 68	$21 40	$50 90	$176 30

The figures may not be absolutely correct for former years, but for this year they are absolutely correct. They varied from $5.00 per tree to $70.00 per tree. That will give you some idea of the different varieties. The value of the Grimes Golden this year has been $490 for six trees. The orchard has been planted twenty-four years and has only been in full bearing for ten years. The average per tree this year is 564 bushels from 50 trees. The orchard is located in Washington county in the southern part of the State. Referring to the history I will say that it was planted as is usually planted and it was cultivated by having strawberries between the rows. The grass has been growing up during the year and we keep our poultry there, so there is really not a sod. I know that as farmers

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we frequently get the idea that we cannot afford to grow apples, even for our own use. We want to correct the impression that it does not pay a farmer to raise apples. We have farmers who say they can buy apples cheaper than they can raise them. They can, the way they buy them, usually about three bushels will supply the family for a year. They raise cheaper families, too, I believe. If they have the apples they need, it is cheaper to raise them than to buy them. We as farmers, can grow apples successfully and make it a paying business and at the same time it will cost us less money than to buy our fruit. There has not been a failure in seven years. I have here the figures showing the cost of spraying, etc., and giving the total cost and net gain each year. The average cost of spraying each year is $15.82, 50 trees on two acres of land. The cost of pruning together with the cost of marketing, interest on the investment, boxes, etc., makes the total cost of $50.90. Can we afford to grow apples as farmers? I want to say to you farmers that I don't have two acres on my farm as profitable as the two acres of this apple orchard. There are a great many objections raised by farmers as to growing apples. They say they don't have time. There are other crops requiring the time. We do have the time to do the things we want to do. Much of the work of growing apples can be done when we are not employed in doing other things. The employment of this idle time will not work us any injury and I am sure that when Satan is looking for something for idle hands to do he will not find a man who has a good orchard on his farm. They say that they have not the knowledge. If I were a farmer I would not make a confession that I did not have the knowledge about growing apples. With all the work that Purdue has sent out and the work that the people of the State have done, I think it is putting our knowledge at a very low rate. Again they say they have no equipment. For growing wheat we need to have three or four times as much money invested as for growing that many acres of apples. They tell us that there is no market for the fruit. We have no difficulty in that line. The question is, are your apples worth selling? If so, the market is always there. We have no difficulty in disposing of all the apples we raise. The price has usually ranged about $1.00 per bushel. We have had apples sell for 30 to 40 cents per bushel this year and also at $1.25, and those for $1.25 were in much greater demand. Another objection is that if we plant our trees we must wait a long time to get returns. That is true, but the orchard can also be used to grow something else and the ground made to pay for itself. Even if we get no returns for a while it seems to me that the satisfaction that comes when we do get a profit, is enough to sacrifice a few years for while our orchard is getting into bearing condition. Then if we think of those who come after us we ought to be willing to put a little time and money into

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the planting of apple trees. Of course other trees besides apple trees have their place. When this orchard was planted twenty-four years ago, the neighbors said, you are foolish, you will not live to see the benefit of it, but my father did live to enjoy it and I know of the benefit to his children and grandchildren and it is worth sacrificing for. Is that not enough to inspire in us a desire to plant an orchard? I want to leave the thought with you as farmers that we *can* afford to grow apples, we *can* find time to care for them and we are making a sad mistake in not availing ourselves of these privileges. I should like to make a plea to the farmers of Indiana for I realize that you are particularly interested in fruit growing, and the appeal to others must come through you and you must show them these things, and then if they do not take hold and raise them as they should it is their own fault, but it seems that the good news is spreading over the State and it will only be a short time when we will have a supply of good apples that we can depend upon.

Question—What provision are you making for other trees when these give out?

Mr. Heacock—I am planting new trees every year. When I find a variety that does not pay, I don't plant many of them. I would cancel all but about eight of this list.

Question—How many sprayings did you give?

Mr. Heacock—The sprayings this year were three applications; two of lime sulphur and one of Bordeaux mixture. Usually two or three per year.

E. R. Smith—I was in Crawfordsville a while ago and saw some excellent Grimes Golden apples. I asked for 10 cents worth and the man gave me more than I could carry. He said he paid 25 cents per bushel for them. I said, "I am used to getting two apples for a dime." He said a farmer had brought in a load of apples and the grocer had bought them for 25 cents per bushel. They were of all kinds and he sold them for 25 cents, not knowing what he had. A friend of mine was traveling through the country and saw some fine apples and filled his buggy bed with them and then went to the house and told the farmer he had stolen the apples and asked him to come to his office the next day and he would settle for them. When he came, he said "I am glad you got those apples for I sold $500.00 worth of them." There is no reason why a man with one pig should not sell that pig for just as much as if he had 1,000 pigs. This knowledge should be spread.

Member—I think he must live in Southern Indiana, for I bought some there at 50 cents per bushel that cost $1.50 here in Indianapolis. I have

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no patience with the farmer who is so busy that he has no time to take care of apples for the home. There is not a farmer in Indiana but who spends many times as much time in doing nothing as would take care of an orchard. As farmers when we take our produce to the city we do not take the care of it that we want the other fellow to take when we buy. I am quite well acquainted with nearly every commission man in town and they say to me, if the farmer would just learn the fact that his apples or fruit he puts up and sends to the commission house must be the same quality from top to bottom of the barrel he would not only double but treble his money for his produce. I have bought stuff that looked good and got down about half way and found it was not worth anything. I will say that there were melons sent from Southern Indiana to this city that were not fit to feed to the hogs and they ruined the melon trade for the rest of the season. I know a man who took a sample of apples to a wholesale grocer in this town and wanted to sell from the sample and the grocer told him he knew he could not furnish those apples. He said it could not be done because it never had been done. If we want the best, let us furnish the best. Let our name as horticulturists go down to our children as honest men, and honesty means the same kind from top to bottom of the packages.

Mr. Hobbs—I would like to hear from Mr. Burton.

Mr. Turley Burton—I am not disposed to blow about what we have done, but I will tell you that we had 100 Grimes Golden trees this year that gave us about 835 barrels of apples. About 675 barrels of these were strictly No. 1. Thirty-five barrels were late gathered No. 1 which were smaller, and the gross receipts were approximately $3,300.00

Prof. Woodbury—What are the results on the Ben Davis?

Mr. Burton—I have not the exact figures on Ben Davis. I gave the figures to Prof. Troop. There were 57 trees and they sold for $2.50 per barrel.

Prof. Troop—The Ben Davis brought just about half what the Grimes Golden did.

The following committees were appointed:

Committee on Resolutions: Messrs. Heacock, Conger and Kingsbury.

Committee on Obituary: Mr. E. Y. Teas, Mrs. Flick and Mr. Hobbs.

Auditing Committee: Messrs. King, Biliter and Beck.

Membership Committee: Messrs. Shoemaker, Wood and Wallace.

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WEDNESDAY EVENING SESSION.

POOR FRUIT AND PURE FOOD—THE RELATION OF THE INDIANA STATE BOARD OF HEALTH TO HORTICULTURAL FAILURES.

DR. H. E. BARNARD, State Food and Drugs Commissioner.

My subject is not more formidable than the conditions to which it refers. At first thought the apple grower in Southern or Northern or Central Indiana who has not netted a reasonable profit on his orchard may not see the connection existing between the Indiana State Board of Health and fruit growing, but when he learns that this board not only records the vital statistics of the State, regulates the condition of school houses and disseminates instruction for the prevention and cure of Tuberculosis, Typhoid Fever, Scarlet Fever and Diphtheria but, as well is charged with the enforcement of the Pure Food Law, it becomes apparent to him that there is a real and definite bond between them. Since last June it has been my good fortune to have visited the great pear orchards in the Sacramento Valley, the orange groves of Southern California, the apple orchards of Washington, Oregon and British Columbia, to have traveled through the fruit belts of Kansas and Missouri, Pennsylvania and New York, to have spent some time among the orchards of Southern Maine and between times to have rambled through many Indiana orchards including the famous peach and apple orchards of Brown County. Fortunately I count it, that much of my life has been passed in the orchard and in fruit growing, for back at my New Hampshire home, my father grew small fruit and apples and from the time when, as a little fellow, I picked cider apples out of the frosty grass down in the lower pasture and hauled them in ox teams to the railroad station to be dumped in box cars at 10 cents a bushel to last week when I paid 50 cents for six apples in New Orleans, I have loved the fragrance of the orchard in the Spring and feasted my eyes and satiated my appetite with the glorious fruit in the Autumn and all the while appreciated the fact that there is no life more to be envied than that of the horticulurist and no department of Agriculture more profitable to the worker.

From the time I first visited the hills in the southern part of the State, I have been a prospective horticulturist, and every year my longing for an orchard increases and my belief grows stronger that there is more money wrapped up for the scientific fruit grower in Indiana soil than there has ever been for the man who drills for oil or bores for gas. The results may not be as astonishing but they will be uniformly more satisfying.

What has the Food Department of the State Board of Health to do with the members of the Indiana Horticultural Society? The relationship

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indeed is very close. You should be more insistent in your demand for efficient food laws than any other class of agriculturists because your products are most subject to adulteration. The grain grower is not injured by impure food, because grain products are not adulterated. Neither are the vegetable and canned goods, sugars and meat products—at least in a manner that affects the quantity of raw material required for a year's consumption.

But this is not true of the products of the orchard, the vineyard or the berry field. Flour can only be made by grinding grain, beef by converting grass into cattle, canned corn and beans and peas by putting the genuine vegetables into appropriate packages, but cider vinegar is made without the aid of a sour apple tree, wine is still produced after the manner described by Addison—300 years ago in the Tatler, who, speaking of food adulterators, said:

"These subtle philosophers are daily employed in the transmutation of liquors, and by the power of magic drugs and incantations raise under the streets of London the choicest products of the hills and valleys of France: they squeeze Bordeaux out of the sloe and draw champagnes from an apple."

Jellies and jams need never know the color of a strawberry to go to the market under that label, and a chemical laboratory is parent to a host of delicacies we in our ignorance think to be the gift of the Goddess Pomona.

When our laboratory was opened five years ago we found that of 145 samples of cider vinegar, but 12 were pure. One hundred and thirty-three of those samples sold for cider vinegar were made by distilling a mash of sour grain and adding burnt sugar to the acetic acid so obtained. Vinegar companies in St. Louis, Louisville, Toledo and Cincinnati were flooding this State with their illegal product, which cost them but a few cents a gallon to make, but which when wholesaled at an average price of 12 cents, made them a profit of several hundred per cent., and practically destroyed completely the market for legitimate cider vinegar, which yon gentlemen know cannot be profitably made and delivered to the grocer for 12 cents a gallon. Indeed, it is probable that every year prior to the passage of our Pure Food Law, thousands of barrels of so-called cider vinegar were consumed by our citizens which did not cost the maker one cent a gallon to produce. It is also probable that a million gallons of artificial cider vinegars, representing 25,000 barrels, were sold every year in this State, displacing the product of at least 250,000 bushels of apples and turning $100,000.00 from your pocket into the well-lined purses of the rascally vinegar makers without our State. We have done what we could under

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the Pure Food Law to suppress the sale of illegal cider vinegar and the federal government has rendered us efficient service and has turned back many carloads of misbranded and illegal goods which were consigned to Indiana dealers and purchased by them as a genuine apple product, and yet last year of the 61 cider vinegars analyzed, 25, or 41 per cent., were illegal. It is true that many of these illegal samples were made from fermented apple juice and were so classed because the goods were immature, watered, colored, or otherwise so handled that they did not conform to the excellent standards set out for cider vinegar in the Pure Food Law. And right here may I suggest to you, many of whom no doubt utilize the by-products of your orchards in making vinegar that it is no easy thing to convert apple juice into a legal cider vinegar. Something else is required save an old barrel filled with cider. In the first place, it may be well to suggest that it is not allowable to add to the cider which you propose to make into vinegar anything whatsoever. It must not be watered; it must not be sweetened by the addition of sugar or molasses; it must not be colored. Cider vinegar is defined (I am going to read you the legal definition) on page 46 of the Food Law as "the product made by the alcoholic and subsequent acetous fermentations of the juice of apples, is laevo-rotatory, and contains not less than four (4) grams of acetic acid, not less than one and six-tenths (1.6) grams of apple solids, of which not more than fifty (50) per cent. are reducing sugars, and not less than twenty-five hundredths (0.25) grams of apple ash in one hundred (100) cubic centimeters (20°C.); and the soluble ash from one hundred (100) cubic centimeters (20°C.) of the vinegar contains not less than ten (10) milligrams of phosphoric acid (P_2O_5), and requires not less than thirty (30) cubic centimeters of decinormal acid to neutralize its alkalinity."

To those of you who make vinegar the last part of Section 545 of the revised statutes is worth noting: "Every person making or manufacturing cider vinegar who is not a domestic manufacturer for his own use thereof, shall brand on each barrel, keg or bottle containing such vinegar, the name and residence of such manufacturer, the date when the same was manufactured and the words "cider vinegar." No vinegar shall be branded "fruit vinegar" unless the same be made from apples, grapes or other fruit."

It is not my purpose to outline the methods which should be followed for the production of a pure and legal vinegar. If you wish such information you can get it fully and accurately by writing to the Department of Agriculture at Washington, asking the Secretary to send you his bulletins on cider and vinegar making.

Throughout the State, and especially in the temperance districts, there is a constant increasing demand for an unfermented fruit juice and many forms of ciders are coming on to our market. Several of these you man-

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ufacture yourselves, but unfortunately the most of them are made in St. Louis and elsewhere, and although they are sold as blackberry cider, cherry cider, orange cider, raspberry cider, peach cider and apple cider, the most of them are not true fruit juices but are synthetic products made by mixing citric acid, synthetic flavors and sugar syrups. Many of these goods contain preservative and for that additional reason are illegal. Indeed, of the 109 samples of fruit ciders analyzed last year 36, or 32 per cent., were classed as illegal. There is no need for me to describe the competition the manufacture of pure food products suffers because of imitation goods. Fifty-eight per cent. of the fruit butters and canned fruits were illegal because of their being misbranded or otherwise adulterated. Twenty-seven per cent. of the samples of jelly were similarly adulterated and 45 per cent. of the jam was illegal. Fifty per cent. of the mince meat inspected did not conform to the Pure Food Law. How many families sit down to a dinner a part of which does not consist of the product of pure fruit? How many children grow to maturity without knowing the worth of bread and jam as an antidote for hunger? When dairy butter is high, fruit butters help to reduce the cost of living. Indeed, when small fruits are not in season fruit preserves are almost a necessity. Years ago, and even now, it is not uncommon to estimate the industry of a housewife by the number of jars of fruit in her cellar, but, unfortunately perhaps, her inclination today is to depend upon the grocer for her preserves, and if her husband, wondering at the change in the taste of currant jelly since his boyhood, could only know its modern origin, he would lose his appetite and fall back upon dried prunes.

Is it within my province to inquire why grapes are not more extensively grown in this State? You no doubt remember that the reason why the Ohio River Valley was largely settled by Germans was because the earliest emigrants were attracted there by the resemblance of the rugged hills on either side to the hills of the Rhine and came there to engage in grape growing as they had done in their European homes. But for some reason grape growing has never become a large part of out horticultural industry, possibly because of the extensive adulteration practiced in the manufacture of wines. Indeed, within the last few years a pure wine was a rarity and the ordinary wine sold for both beverage and medicinal purposes bore no relation to the grape which was supposed to produce it. Wines as we knew them were made from water, alcohol, glucose, glycerine, aniline dye and synthetic flavors. Of 20 wines examined by us one year but 4 were genuine grape products. In California the wine growers have seen the necessity of suppressing the fraud in wines and compelling the sale of their goods under proper labels, and their strong association, backed up by State and Federal food laws, has been so successful that to-

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day a wine coming from California is sure to be genuine, and today California wines are sold everywhere in this country at prices equal to those of imported goods and, indeed, they are even shipped to France and Italy in considerable amounts.

I am not going to take your time by discussing the gross fraud practiced by fruit growers who pack inferior fruit and ship it as an A-1 article, who used short-weight baskets, boxes and barrels, who misbranded their fruits so that the unsophisticated purchaser may be supplied with Ben Davis apples when he thinks he is buying similarly colored but better flavored fruit. I leave to your association the work, for there may still be a necessity for it, of correcting such lapses of morality and honesty among your brother fruit growers.

If I had more time, indeed, if it seemed necessary I should like to tell you something of the work we have done in improving the canning industry in our State, for that subject I take it, after Mr. Osborne's paper this morning, comes within the province of the horticulturist. We believe that we have been of assistance to the tomato growers and packers and that we have helped a little bit at least to increase the market value of their output. I trust that our work will be equally helpful to the fruit growers of Indiana and that as a consequence you may find a better market at better prices for your vinegar and small fruits.

SOME APPLE DISEASES COMMON TO THE MIDDLE WEST.

Mr. J. W. Roberts, Scientific Assistant, Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C.

(Illustrated with bromide enlargements.)

The Department of Agriculture is really a collection of offices and these offices group themselves into Bureaus. I belong to the department of fruit investigation. The insect question is taken up by one set of specialists and the fungus and allied diseases by another set. I will go over the diseases most common in this part of the country and tell briefly a few things about them and discuss the remedial measures which you are principally interested in. I have a series of pictures here which will illustrate the diseases of apples. The first disease is the apple scab. I suppose it is really unnecessary to call attention to the picture of the scab. Most of you know that. The broken skin and rough appearance, cracked fruit, small in size and lacking in keeping quality because the skin is broken, is generally what the term "scabby" would imply. The infection of the scab fungus takes place early in the spring as soon as the leaves get a chance to come out. Then the scab fungus begins to work so the first spraying for

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scab will come at that time. The scab fungus lives through the winter on the dead leaves on the ground, produces its fruit (or spores) in the spring at the time the leaves come out and infects the leaf-stalks and blossoms and all young green parts. The illustration shows the apple buds just out; that is, you can see the red. The first spray for scab comes at that time. The second spraying for scab comes with the first spray for codling moth, that is as soon as the blossoms fall. The third spraying would come about three weeks later. Apple blotch is shown in this picture. Many people know they have some disease on their apples but do not know it is blotch. It is often called scab by people who have never seen the disease. Blotch starts with an irregular spot which gets a little worse and looks almost like rot, then finally comes to the cracked stage. The winter is passed principally on twigs, where the disease causes bark cankers. An orchard that is carefully pruned then, will be less liable to blotch. The first spray for blotch will be the first spray for scab. That is, the first spray comes about three weeks after the blossoms fall, another in two weeks and another in two weeks more.

The next disease is bitter rot. I suppose almost everyone knows what that is. The fungous spore corresponds to the seed in the higher plant. Here is a picture of bitter rot. It generally comes in about the last of June. The first spraying should come before the disease gets a start. You should go right in and spray heavily with Bordeaux mixture and if you have the disease badly, spray once and then spray over again right away. Generally two more sprayings will be sufficient. Bordeaux mixture is the only thing we have had success with. We have never tried copper-sulphate without the lime on account of the injury it causes to foliage.

The next disease is black rot. It is often called "ring rot." In many sections this is a very bad disease on the leaves. Ordinarily it is not so bad on the fruit. Ordinary spraying that we give for other diseases will prevent this disease. One of the best ways to keep down leaf spot caused by black rot is to keep the dead limbs pruned out. Often you see dead limbs with the black rot on them, and if you look carefully in the spring the leaves that are spotted worst are close to dead limbs.

The next is the cedar rust. I suppose this has caused me more troble than any other disease as it is hard to make a man believe that a cedar tree has anything to do with it. In the spring you will see those long growths coming out from the well known cedar apple and when they dry the wind blows the spores on the apple. The first indication of the disease appears as a spot on the upper side of the leaves. A few weeks later they come on the under side. On the apple fruit it often causes contortion and

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sometimes causes a cavity. Of course the best remedy for cedar rust would be to cut down all the cedar trees, but a great many people think as much of their cedar trees as they do of their apple trees. There is one encouraging sign and that is that lime sulphur controls cedar rust better than Bordeaux mixture. The hard thing about spraying for cedar rust is that the period of infection is so long. Last year it began about the first of April and lasted until the first of June and thus increased the tendency to rust. The thing in spraying for fungous diseases is to get there before the fungus does. That is, the spray must be there before the spore gets there and germinates. Once the spore gets there and germinates you cannot control the disease by spraying. We have to beat the fungus to the tree. The apples illustrated in this picture were sprayed with Bordeaux mixture and were experimental apples at Winchester, Va. These were sprayed with boiled lime sulphur and these were sprayed with commercial lime sulphur. I also have something which may be of interest to the lime sulphur business. This represents to some extent our results in Virginia last year. The illustration shows a plot of six trees. Ninety-nine per cent. of the fruits were scabby. In the sprayed plot it ran from two to six per cent. scabby. Here is a lime sulphur plot. We use two pounds arsenate of lead to fifty gallons of water. Of the apples grown in Virginia there are few with bitter rot. The year before we sprayed the Yellow Newtown for bitter rot but our lime sulphur sprayed trees gave no results. Our Bordeaux gave good results. In that section of the country Ben Davis will not bitter rot but in some sections it bitter rots as much as it can.

This is an unsprayed Winesap tree which shows the scab. This picture shows the effect of spraying. This is a cherry tree unsprayed showing how the spray can affect the foliage. Here is the picture of a government man at work. Some people think that is a joke. For bitter rot we give three sprayings, but if you see you have it in your orchard, you want to get right after it. It is one of the hardest things to fight. Spray it and then go right back and spray again. The bitter rot, when it gets a start develops spores very rapidly. You probably have noticed the pink rings turning to black. They are myriads of spores and when they get a start they come very rapidly. They will probably develop in cold storage. They should not get into cold storage but they sometimes do. Here is a picture taken in Arkansas that is interesting. One orchard was sprayed and this one, planted at the same time, was not sprayed. The looks of the foliage show something. It was given a regular demonstration spraying for everything. The apple trees were sprayed for scab and bitter rot and received six sprayings. Here is a cherry tree sprayed three times to make it keep its leaves. The leaves had dropped and prevented the fruit from maturing

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properly. We used Bordeaux mixture, self-boiled lime sulphur and commercial lime sulphur. The cedar spores will carry probably a half mile but it depends upon the location and wind.

DISCUSSION.

Question—What condition in Virginia was called "leaf spot" in Scott's bulletin on apple diseases?

Mr. Roberts—That was commonly called "frog eye." It is prevalent to some extent. It does not often get that bad here.

Question—What diseases cause apples to drop off?

Mr. Roberts—A great many. Dry weather is one of the worst causes. One man lost his crop because the leaves dropped off. It affects the future life of the tree.

Question—Is dropping of the fruit not often due to poor pollination?

Mr. Roberts—Yes, it is. I have noticed that it is often the result of dry weather, especially on the Jonathan. In Virginia, Jonathan is an early apple and if dry weather sets in, most of them drop.

Question—Does the Kiefer pear require cross-pollination to produce a crop?

Mr. Roberts—Yes. The only thing in the way of a remedy for blight is aseptic surgery. The best thing you can do is to keep it down as much as you can. If you can get your neighbors to help you out, so much the better. If you have any old pear trees around that have blight, cut them down.

Question—How do you treat the root rot?

Mr. Roberts—The only thing is to keep it from spreading to other trees. I would take the tree out and let the ground stay idle for two or three years before replanting.

EXTENSION WORK IN HORTICULTURE. THE PURDUE EXPERIMENT STATION AND THE FRUIT GROWERS OF INDIANA.

MR. M. W. RICHARDS.

Twenty-five years ago nearly every farm in Indiana had a farm orchard that not only produced fruit for home use but some for market as well. These old orchards are now dead or dying and a loss to their owners rather than an asset. The farmer of today says that he no longer can raise good fruit—that the climate must have changed. This is not the

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case however. With the clearing of the land, native insects and disease have had to change their natural food plants and many have gone to our cultivated fruits; not only this but the increase of commerce between this and other countries has tended to the introduction of pests from other lands. This increase of pests is the main cause of the decline of the old home orchard. The climate has not changed. Indiana can raise just as good apples today as she ever could. All the trees need is a little attention. The knowledge of how to give this attention is lacking and with this fact in mind the Department of Horticulture of Purdue University Experiment Station inaugurated a campaign for the reclaiming and care of the average farm orchard. The first note of this campaign was sounded at the summer meeting of this society held at Centerville, August 4, 1909, when Prof. Woodbury announced that a representative of Purdue would visit any community upon the invitation of ten men interested in horticulture, and show the people of that locality just how and when to prune and spray. From that announcement has developed a well defined movement in the direction of orchard improvement. The extension work of the Horticultural Department now embraces the establishing and running of demonstration orchards; the holding of demonstration meetings; fitting up of county and state fair exhibits; lecture work in Farmers' Institutes and Short Courses and the distribution of lists of books suitable for horticultural work in our country schools.

Before much can be done in helping the farmer care for his trees, he has to be convinced that there is money in it. To accomplish this end demonstration orchards were established in localities where conditions were favorable for fruit production and where orchards were badly neglected. Any farm orchard can be used for a demonstration orchard, but we prefer to have an apple orchard of from 50 to 500 trees of few varieties and from 25 to 50 years old. The trees should be in fairly healthy condition but neglected as to pruning and spraying. We also like to have the orchard located near a main road so that it will be easily accessible to all who may be interested in it.

Whenever a demonstration orchard is established, the Horticultural Department takes direct supervision of the orchard. The owner signs a statement whereby he agrees to furnish all necessary labor, tools and implements for the care of the orchard and to bear the expense of necessary spray material. All crops from the orchard belong to him and are at his disposal—the Experiment Station reserving the privilege of taking at its own expense such data on the crop as are desired.

The pruning, spraying and other work done in the orchard is carried on at the time and in the manner specified by the Horticultural Depart-

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ment. In order to insure a proper understanding of this work by the owner, we furnish a member of our staff at no expense, to supervise the work in the orchard whenever it is necessary. For his own and the Station's information, the owner agrees to keep a full and accurate account of all labor and expenses incurred by him in connection with the care of the orchard, including the cost of spray materials, pruning tools and the labor used in spraying, pruning and harvesting. In order to determine the results of the treatment, a portion of the orchard is set aside and receives no spraying and pruning. In short, the owner of this orchard agrees to

A Purdue Horticultural Department neighborhood meeting in Brown County.

take care of it in a thoroughly up-to-date manner and to follow directions in every detail, of the expert sent out from Purdue. The main object of these orchards is to show the people in that particular community just how to care for their orchards and the results that are obtained.

At the present time we have four such orchards. One each at Seymour, Guilford, Borden and Spades. These orchards have only been under the direction of the Purdue Station for one season but astonishing results have been obtained.

The Seymour orchard, which had never been sprayed and was very badly neglected as to pruning, was taken after the trees were in full bloom. The first two sprayings were from three to four weeks late, yet very gratifying results were obtained. The trees which had never pro-

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duced an apple that would grade even as a number 2, now produced 50 per cent. of the crop "Fancies." The cost of labor and spray materials was recorded for each spraying and the total cost per tree for all four sprayings amounted to 10 cents. This was too little for best results and had the cost of spraying been higher, an index of better work, the percentage of "Fancies" would have materially increased.

Another orchard which supplied very good evidence as to the benefits of proper treatment was the one at Guilford. This orchard had never before produced a bushel of No. 1 fruit and this year the three acre demonstration plot produced over $300 net in the way of apples.

At the Borden orchard an almost total crop failure was experienced. For all that, enough apples were harvested from the sprayed plot to pay for all the pruning, spraying and general care of the entire orchard. The trees are now in excellent condition to bear a bumper crop next season.

This season these four orchards have been visited by hundreds of people who have neglected home orchards and who wanted to be shown that fruit can be raised in Indiana if proper care is given it. From these neighborhoods we now receive calls for information as to how these results were obtained. In reply to these appeals we organize one of our demonstration meetings. These demonstration meetings are all day sessions held in a run down home orchard where an expert from our department explains the various phases of orchard management.

The object of these meetings is to give the farmer such instructions as are necessary successfully to reclaim the rapidly disappearing home orchard. One day is devoted to each meeting and they are held in the orchard where every phase of practical orchard management can be explained and illustrated. The morning session is devoted to general problems such as orchard cultivation, cover crops, fertilization and pruning. The demonstrator carries with him a kit of pruning tools such as every farmer should possess and their merits and workings are studied. The how, when and why of pruning are explained and a badly neglected tree or two are actually pruned. This phase of the work excites the most interest, as every farmer has at some time tried to prune his trees and a few usually find out that the ax is not one of the recommended tools. After a picnic dinner, the session is devoted to the more complicated question of insect and disease control. As very few farmers know the pests that destroy their fruit, the early part of the afternoon session is usually devoted to the description and exhibition of the most important orchard pests, such as the codling moth, plum curculio, San Jose scale, apple scab, brown rot, apple blotch and the fire blight. Remedies for these pests are recommended and the various sprays made up. The two standard in-

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secticides, lime sulphur and arsenate of lead are made and explained. Bordeaux mixture, the standard fungicide, a combination of blue stone and lime, is also made and applied. The proper time for applying these sprays as well as how to apply them is fully explained. Pumps which have been brought to the meeting from the surrounding orchards are discussed and various types of spray nozzles are shown and recommended. The results of spraying are shown both in chart form and in specimens of sprayed and unsprayed fruits. Owners of orchards are convinced that spraying pays and the majority of those attending the meeting decide to

A crowd of St. Joseph County fruit growers near South Bend watching the spraying demonstrations of the Purdue Horticulturists.

try it next season. During the fall of 1909 and the spring of 1910, 77 meetings were held in 56 counties. There was an average afternoon attendance of 50 and throughout the whole campaign thousands of farmers were reached. Four experts were employed at this work. During the past season the method of holding these meetings was changed. Fewer meetings were held and these meetings were advertised over the entire country. Eleven meetings were held with a total attendance of 1,250. The largest attendance at a single meeting was 300 and the smallest was 50. The people who attended these meetings were representative of the entire county—some coming 25 and 30 miles. Everyone was deeply interested in the work, showing that the reason for the neglect of our farm orchards does not lie in a lack of interest in the work but in a lack of

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knowledge of how to do the work. This line of extension work will be continued and any one interested should correspond with the Horticultural Department at Purdue.

Another distinct line of extension work is that of supplying horticultural exhibits to the state and county fairs. During the past season an exhibit was sent out to numerous county fairs. This exhibit was packed in box form so that when the cover was taken off the material was ready for display. These boxes contained examples of student's work in horticulture and exhibits of standard spray machinery such as pumps, hose, extension rods and nozzles. Pruning tools were also included and specimens of good and bad pruning were shown. Top grafting was graphically explained and the tools and materials necessary for the operation exhibited. The county fair boxes are 5 feet high, 4 feet wide and 10 inches deep and contained in as concise a manner as possible, an exhibit of material interesting to the practical fruit grower. At the state fair the Horticultural Department had a large exhibit of horticultural material. The part of the exhibit which attracted the most attention was an apple show of over 80 varieties. These fruits were as perfect and as highly colored as any fruit grown in the far west and much better in quality. Beside this exhibit was shown wax models of the codling moth, San Jose scale and the various plant diseases which affect our cultivated fruits. Another interesting part of this exhibit was a display of the entire crops from sprayed and unsprayed trees. This exhibit graphically explained why spraying pays. From the unsprayed tree there were just two apples that could be ranked as firsts and from the sprayed tree about 90 per cent. of the crop ranked as firsts. The people of Indiana have become discouraged in the battle with the pests and have given up. All they need is to be shown that good fruit can be grown here still, and how to grow it, and Indiana will become one of the leading fruit sections of the United States. By means of these fair exhibits, thousands of farmers were reached and their interest in fruit growing stimulated enough so that there is a greatly increased demand for the publications on the care of the home orchard. Next season it is the plan to enlarge our county fair exhibits and to display sprayed and unsprayed fruits from the demonstration orchards. This is the most convincing form of argument in favor of spraying and by means of the exhibits at the county fairs the field of influence of these orchards can be greatly extended.

The work of the extension division of the Department of Horticulture is that of disseminating the knowledge already gathered by the experimentalist. The experimental work in horticulture should be continued, but hand in hand with it should go the work of dissemination. This

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work in the past was attempted solely by means of the publications. One man out of a hundred can read a principle in a bulletin and then put that principle into practice. To him the old means of spreading the results of the experimental work was all right. To the other ninety-nine it was ineffectual. They have to be told and shown. The only way to tell a man anything and be sure that he gets it straight is to do it right before him in the form of a practical demonstration. Such is the function of the extension work of the Purdue Experiment Station. With the coöperation of every fruit grower in Indiana, the value of this work can be greatly enhanced. So let us all pull together for better fruit for Indiana.

Mr. Milhous—I want to say that while I have no ax to grind, I like the work Purdue is doing. I am glad they got $10,000 from the State to pay for this work, but how long do you think it is going to take to convince the Indiana farmer that he can raise fruit? I am glad we have a state entomologist that has $15,000 for his work and I know he is doing good work in Indiana, and Purdue nor our state entomologist neither one has half as much money as they ought to have to go before Indiana with such important questions as teaching the farmer how to grow his own fruit and fruit for the market. There are millions of money at stake which ought to go into your coffers by careful knowledge and instruction as to how to grow the right kind of fruit, and I believe the orchardists here will testify to the truth of that statement. I want to encourage Purdue in every way and I want to encourage our state entomologist the same way, and I am glad we have a young college coming on to teach our young men to find the things we need, and I am glad we have young men here to take notes and take them back to their school and improve from what they learn from this society. Every organization that is interested in fruit growing ought to be here and take the facts home that they learn here and show their neighbors how to do these things.

At the close of the session a barrel of very fine Aiken apples which were grown and donated by the Burton Fruit Company, was opened and thoroughly enjoyed by all present.

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THURSDAY MORNING SESSION.

SUMMARIES OF REPORTS OF DISTRICT VICE-PRESIDENTS—SHORT AND SNAPPY STATEMENTS OF THE SEASON'S STORY.

First District—W. J. RITTERSKAMP, Princeton.

No report on account of illness of Mr. Ritterskamp.

Second District—R. A. SIMPSON, Vincennes.

The extremely unseasonable weather of the spring of 1910 was very hurtful to the fruit business. As warm weather came in with March, fruit trees and small fruits all bloomed from two to three weeks too early. The bloom was unusually heavy and the fruit set remarkably well. By April 23d the apples were as large as very large cranberries. At this time we had a cold snap, with high north and northwest winds and snow, the thermometer dropped down to 27°. Practically all of the orchard and small fruits were killed. On the 24th of April the temperature did not go above 34° all day. For a week following we had cold, cloudy weather. The remainder of the season was fairly favorable for the fruit that was left.

There were a few orchards which escaped much and, in some cases, all of the freeze and came out with a fine crop of fruit. This was, no doubt, due in most cases to elevation, protection (either by smudges or timber wind-brakes), or variation in temperature. However, the fact must not be overlooked that in several cases the superior yield was to a very great extent due to good orchard management. Barring all local differences and location it is such years which demonstrate "Who's Who and Why"—we to find out the Why. Other things being equal, orchards which had good healthy foliage last year, were favorably located and which received thorough spraying and care at the proper time came out with the best results. This shows that the work of the man behind the gun counts even under such unfavorable conditions.

The crop for the past year was about as follows:

Apples, 10 per cent.; peaches, 25 per cent.; pears, 50 per cent.; plums, 20 per cent.; quinces, 75 per cent.; cherries, 10 per cent.; strawberries, 50 per cent.; blackberries, 25 per cent.; raspberries, 60 per cent.; gooseberries, 50 per cent.; currants, 60 per cent.; grapes, 10 per cent.; watermelons, 50 per cent.; muskmelons, 70 per cent.

In looking over the second district it appears to me that the horticultural possibilities in our district have been overlooked and surely underestimated. We have many desirable conditions which are actually required for successful fruit growing. Our land is high and rolling, well drained.

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with a rich clay loam underlaid with a stiff clay subsoil, just the kind of soil in which to raise apples of high quality such as Grimes' Golden, Winesap and Rome Beauty. In fact these varieties do grow to perfection here and are very profitable when handled properly. This soil is also very fine for berries. Desirable orchard land is selling for from $100 to $200 per acre.

I wish to call especial attention to the sandy soil around Decker Station, a small town nine miles south of Vincennes, to which the melon interests are attracting the attention of all the large markets. This soil is a rich, sandy loam in which melons of high quality are grown to perfection. This soil also produces fine peaches and sweet potatoes. Melon land around Decker is selling for from $150 to $200 per acre. The past year Decker shipped out 150 carloads of watermelons and 144 carloads of muskmelons; 25 cars were Tiptops. They also had a large crop of peaches. It is no unusual thing for melon growers to realize $150 per acre for their melons.

This second district is also well supplied with railroads running in all directions, making it possible to reach Chicago, St. Louis, Indianapolis, Cincinnati and New Orleans markets in a reasonable time.

Stating the above facts briefly we might say we have in the second district an ideal location, soil, shipping facilities and markets, all of which are very desirable for fruit growing.

Our district is a great and profitable corn and wheat section. It is populated by thrifty farmers who are in better financial circumstances than ever before. However, they are doing so well with their wheat, corn and stock that the orchard business is overlooked. Even though there is a good family orchard it is the first thing to be neglected and the last thing to receive attention. We have but few good orchard men in our district. However, those few really thrifty orchardists are pushing ahead for all there is in it and as a result are realizing much more from their orchard interests per acre than from their farm products.

The following pests are prevalent but all can readily be controlled by the good orchard man: Apple scab, apple blotch, codling moth, curculio and San Jose scab. However, most of the family orchards are receiving but little care and attention and as a result are fast disappearing.

Third District—F. J. Heacock, Salem.

The farmers of the third district have lost more than a million dollars this season by their failure to properly care for their orchards and to use good business judgment in disposing of their surplus fruit.

Orchards that have been pruned and sprayed thoroughly have yielded

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net returns as high as eight hundred dollars per acre, while adjoining orchards, through neglect, have hardly paid interest on the value of the land.

The severe freezes in April and May killed much of the young fruit, but in most localities throughout this district there was enough fruit left on apple and pear trees to make a paying crop where reasonable diligence was used in caring for it.

The peach crop was only fair in favored localities and a complete failure in others. In many instances the difference caused by good frost drainage or its absence, marked the difference between success and failure. Cherries, plums and grapes were practically a failure because of the freeze.

The prices obtained for apples and pears ranged from 60 cents a hundred pounds to $1.50 per bushel, according to the quality of the fruit and the selling ability of the grower. Kieffer pears were peddled in the local markets at 50 cents a bushel by people who knew that they could get $1.00 and more in other markets. A number of canning factories in the district bought their requirements of apples at 80 cents per hundred pounds for orchard run fruit delivered in bulk. Most of such fruit was from unsprayed orchards and the quality was poor. Freight agents tell us that more apples were shipped out of this district than in the previous six years.

Peaches were mostly consumed in the local markets at prices ranging from 75 cents to $2.00 per bushel and the supply was less than the demand.

The crop of small fruit was greatly damaged by the freeze; the most important berry districts reporting less than one-third of a crop, with prices exceptionally good. Observations and statistics indicate that there are at least 500,000 apple, peach and pear trees of bearing age in this district and that the average product is but little more than one bushel per tree. The results from experimental orchards and practical growers indicate that this yield could easily be increased to at least two million bushels and the quality much improved.

The two hundred thousand people of this district should consume at least one million bushels of apples each year. Instead of that they are living on less than half that amount and shipping a good part of their crop to other markets.

There are a number of good home markets in this district for certain classes of fruit, and even when these markets are overstocked with inferior fruit there is little difficulty in finding customers for the better grades.

The interest in fruit growing, particularly in apples, has been much greater this season than for several years past; due, in part, to the high

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prices obtained, but also in large measure to the excellent work done by the Horticultural Department of Purdue University in the demonstration meetings, and the supervision of practical work in local orchards. Farmers now realize that it is possible to have an abundance of good fruit with proper care and that spraying is absolutely essential and not so difficult as they had formerly believed.

Taking our own as a representative community, the direct result of the first demonstration meeting held in our county was the purchase and use of a number of spraying outfits, and so far as our knowledge goes, each purchaser has been well pleased with the results.

The use of commercial lime sulphur and arsenate of lead in place of Bordeaux and paris green, has been quite general here and results seem to be satisfactory. Spraying for scale has not been done as it should have been in many instances and the San Jose scale has done more damage than ever before. Two orchards, at least, within the writer's knowledge have become badly infested with this scale, while other scales are common in almost every orchard.

Fungous diseases have done more damage than usual, bitter rot, scab, and sooty blotch being particularly prevalent and in some instances almost destroying the crop of certain varieties of apples.

The outlook throughout the district is promising but uncertain—promising because of the awakened interest in horticulture, but uncertain because no one can tell how much of this interest will end in good intentions.

Fourth District—H. M. STOUT, Trafalgar.

In some respects this year has been a most remarkable one, both in climatic conditions and freakish bearing of orchards. Fruit buds came through the winter in good condition with the exception of the peach, which suffered some from the warm weather in February, which caused the buds to swell and later three-fourths of them perished.

Small fruits were a very poor crop, especially strawberries, which were badly damaged by the frost while in blossom. This cut the crop to one-third the usual bearing. Old beds produced more and better fruit than the new ones, which is very unusual. The blackberries and raspberries were not more than one-half a crop and thus commanded very high prices.

As to orchard fruits, apples were very freakish in bearing. In many neighborhoods there were no winter apples and only a fair crop of summer and fall varieties. Only a few miles distant there were good crops in badly neglected orchards and many of the orchards that failed were the ones best cared for, as to pruning, spraying and cultivation and had ideal location as to soil, frost, drainage, etc. Prices were good as a rule although

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some sold their apples of best varieties, such as Grimes' Golden and Yellow Bellflower, in the orchard early at a very low price.

Much has been said at the local and State Horticultural meetings about the proper way to market apples and other fruit as well, but much more is needed along this line.

Peaches produced a half crop in the most favored places and sold for good prices, from $2.50 down, according to size and quality. The excessive wet weather in July caused considerable brown rot on early and medium early varieties.

Pears were a full crop in many places, especially late varieties and sold for good prices on account of scarcity of other fruit.

The American and Japanese varieties of plums were a full crop while many of the European varieties failed or produced only a small crop.

The prices of all fruits for this season has been above the average and many small orchards are being planted. There is more interest in horticultural subjects and many farmers will use the spray pump for the first time next season. There is some scale in this district and many farmers would like a compulsory spraying law.

This district has as much or more land adapted to profitable fruit growing as any other district in Indiana, although it is known the world over as the producer of the best corn in the world; and as to shipping facilities, it is traversed by four of the greatest railroad systems in the United States.

Fifth District—James W. Carver, Greencastle.

The year 1910 spelled *Defeat* for nearly all fruit growers in our district, coming from the disastrous freeze of April 22d.

The freeze reached all kinds of orchards, the neglected and well cared for alike, with the highly cultivated and fertilized plantations suffering the most by being further advanced. Even the best and largest kinds of wild blackberries were knocked out. The "all seed" ones made a partial crop. Strawberries, where recovered, came on with half crops. The garden crop of peas, sweet corn and even lettuce and radishes were frozen to the ground. This applies to all of Vermillion, Parke, Vigo, Clay and Putnam counties, almost as sweeping in Hendricks but less so in Morgan county.

Well cared for apple orchards all bloomed two weeks ahead of normal season. May 1st is the proper time in the fifth district. Vigo, Vermillion and Parke counties are a garderner's paradise with small competition. In western Parke and Vermillion counties, rich in soil, full of coal mines, tile and brick plants, Wm. Lee of Chicago has the largest tile factory in the west and annually sends from here never less than 5,000 carloads,

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many carloads going to England and other foreign countries. Another firm has a plant costing over $100,000 and doing an excellent business. Most people do not know that this fire clay is mined like coal and is of a dark rock nature and is in such abundance it will last for centuries. Iron tile, all kinds of coping, fancy urns, fire brick lining for large chimneys are produced. Then just over the river southwest of Clinton are four or five mills just being put into operation, several coal mines and coke-burning factories, branches of Gary, Ind., the greatest steel plant. This will reach the northwest part of Terre Haute when fully developed perhaps. Such factories and plants are here by the dozens and I know of no place in Indiana where orchard and garden products bring such prices as here. When I have cull apples to sell in my Greencastle orchard for 25 cents a bushel there, people here get 60 to 75 cents for cull stuff just like mine only not as good, but red apples are the thing. In Clay county big things are taking place in clay products. With a dozen factories and one of the largest piano factories in the country, and a splendid market, yet Clay county has not the rich garden soil that is found all up and down the Wabash river and the Raccoon bottoms around Rosedale and Mecca. Mecca has high bluffs, 200 or 300 feet, lying between Raccoon hills. These hills have air drainage to bottoms. Pears, peaches and apples do well. East of Clinton where hills are not so high, called Mt. Pleasant, fine homes, land worth $100 to $150 per acre, farm orchards with this good soil are ahead of anything I know in the district; better than on the hills of Clay and Putnam. I am describing this country as a place where a man has his market at the door and don't have to buy barrels, pay freight, but go and sell stuff when ready. Lots of people don't have all they need for a variety. You can raise alfalfa on a good deal of the land. It is the fruit gardener's, poultry man's paradise of Indiana.

While our district has fallen behind this year we were not entirely without results in Morgan and eastern Hendricks counties. At Plainfield there were cherries, while in western Hendricks there was not a cherry for a robin. One lone four acre orchard, in sod, belonging to John McFarland, and situated south of the Big Four tracks, which are here higher than the trees, produced about 1,000 bushels of apples. The trees were covered with coal dust and did not bloom until eight days after my orchard. He smudged to save the Transparent trees (they were further along), but did not succeed, but did on Grimes, Ben Davis and Wealthies. My theory is that enough blooms came on after that to make his crop.

As to Morgan county, I have not visited that county this year but have heard it reported that some money was made.

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Sixth District—J. K. HENBY, Greenfield.

There was perhaps less fruit raised in the Sixth District last yeai than ever before on account of frost, ravages of insects, and smaller acreage.

It has been clearly demonstrated that a fight of a few nights in the spring of the year against frosts will save the crop and with small expense as compared with the returns one receives. We believe the time is here when we should pay as much attention to fighting the frosts as to fighting the insects. The fruit grower should be in the game for profit as well as pleasure, so why care for the orchard by cultivating and spraying then let the frost get the crop when it could be warded off by the modern fire pots.

Very little spraying has been done in the district except by those who have large orchards, but there is a tendency toward more spraying. We find it very hard to arouse much interest in the average farmer in the line of spraying and it is very difficult to get any one who is competent that will spray by the job so that if the man who owns the trees does not do his own spraying it goes undone and the consequence is there is no marketable fruit.

We have an orchard in our district that has been sprayed carefully and intelligently for the past ten years and this year it had a crop of fruit on it which paid handsome profits. After carefully going over the situation as to "why this crop," when all around were total failures, we came to the conclusion that it was because of the healthy condition of the trees and foliage, caused by the spraying, which helped the tree to ward off the bad effects of the frost and caused part of the fruit to still cling to the tree, a small per cent., to be sure, but this was carried through to maturity by perfect spraying and everything was first class and brought the highest market prices.

As there is less fruit raised the prices soar upward and with the difficulties that must be combated in raising fruit the average price of the last 10 years is low as compared to the price for the next 10 years to come. Indiana can grow as good fruit as any other section of the country and grow it just as cheap, so there is nothing that is discouraging in the fruit industry in Indiana. Other sections have the same thing or worse to combat that we have and the greater the difficulty overcome the greater the reward will be.

I have the following to report of the crop conditions during the past year; such conditions are only approximate and from general observation:

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	Per Cent. of Crop.	Value per Bushel.
Apples	20	$1 00 to $2 50
Pears	5	1 00 to 2 00
Plums	5	2 00 to 3 00
Cherries	20	3 00 to 3 50
Peaches	20	2 00 to 3 50
Grapes	25	5c to 10c lb.
Currants	20	3 00 to 4 00
Gooseberries, very few.		
Raspberries	50	3 00 to 4 00
Blackberries	50	3 00 to 4 00
Strawberries	60	2 50 to 3 50

Below I report some of the different varieties of fruits which seem to be specially adapted to our section.

Apples—Yellow Transparent, Benoni, Duchess, Wealthy, Rambo, Maiden Blush, Wolf River, Grimes' Golden, Rome Beauty, Stark, Smith's Cider, Stayman's, York Imperial, Indiana Favorite.

Pears—Kieffer, Duchess, Louise Bonne, Clapp, Flemish Beauty, Anjou.

Plums—Burbank, Abundance, Bradshaw, Lombard, Shipper's Pride, Forest Garden, Moore's Arctic, Green Gage, Wild Goose.

Cherries—Montmorency, Early Richmond, Dyehouse.

Peaches—Bokara No. 3, Crosby, Elberta, Salway, Crawford's Early, Fitzgerald, Old Mixon Free, Triumph, Crawford's Late, Foster, New Prolific, Yellow St. John, Champion, Heath Cling, Kalamazoo.

Grapes—Concord, Pocklington, Campbell's Early, Brighton, Worden, Woodruff, Niagara, Wyoming Red.

Currants—Pomona, Cherry, Fay Prolific, White Grape, Red Dutch, LaVersailles.

Gooseberries—Houghton, Downing, Pearl.

Raspberries—Cumberland, Kansas, Eaton, Cuthbert.

Blackberries—Snyder, Eldorado, Ancient Briton.

Strawberries—Warfield, Dunlap, Haverland, Gandy, Stinger's Seedling, Bubach.

From our general observation we believe there has been more clear money made from cherry orchards than from any other fruit and it seems to be less extensively planted. The cherry requires less attention and the average crop is greater than any other crop.

Our soil is varied, from rich lowlands suitable for small fruits to rolling clay lands suitable for the true fruits. We have many flourishing cities and towns with extensive manufacturing interests which make for us

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a home market for our fruit products. The many interurban railways afford a quick and cheap transportation.

Fruit growing in the sixth district, or any other district in Indiana will never be overdone. Indiana is in the center of population in the United States, we have the world for our market and should be the center of the fruit industry.

Plant something that bears fruit, take care of it and you are bound to reap a bountiful reward.

Seventh District—J. J. MILHOUS, Valley Mills.

In some respects the seventh district which is composed of Marion county, is different from any other district in the State. A city in its center with 236,000 population, with a goodly number who do business in the city and live in the country, or who live in the city and do all their farming by proxy, a mingling of city cousins and hayseeds, seems to be an advantage all around. We often learn very valuable lessons from the mistakes of others; and the more we associate with other persons whose ideas vary widely from our own, the easier it is for us to learn and profit by the other fellows' mistakes and see our own. But comparatively few of the farmers and gardeners are up to date in the matter of spraying, most of them thinking it is more trouble to spray and have fine fruit than it is not to spray and let the various kinds of enemies have the crop. A goodly number, possibly 60 per cent. of the farms have a supply of apple trees to make sufficient fruit for home consumption. Possibly 5 per cent. are supplied with Kieffer pear trees and about 10 per cent. have a sufficient number of cherry trees. An occasional farm has a few peach trees but the number is not large enough to figure on much. But few of these trees have good fruit, not that the soil is unsuitable for it has been demonstrated the past season by the State Entomoligist that with proper care as fine tree fruit can be grown here as can be produced in the Hood River Valley. The failures all lie in the want of proper care, in the way of pruning, cultivating and spraying. From all parts of the district reports come in that the San Jose scale has either killed many trees or is on them in sufficient numbers to disqualify them from producing good fruit. In some localities some orchards have been sprayed for two or three years and the results have been abundantly satisfactory. A few farmers have sprayed once and become disgusted because their fruit was wormy, knotty, had the scab, bitter rot, or something else, and would take oath that spraying was no good. If we expect to raise and eat good fruit we must Spray and *Spray* and SPRAY!

There are a few commercial orchards in the district, some of which have been bearing fruit for a number of years. All of these which have

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been properly cared for have been a source of profit. Indifference and fruit growing for profit do not go hand in hand.

There are a number of persons who grow blackberries, raspberries and strawberries, and a few grow gooseberries and currants, and for a number of years with but little exception, these crops have been quite profitable, some fields yielding as high as $300.00 per acre.

Many of the gardeners have reaped good rewards for their labors; however, a few have been troubled with leaf blight on their tomato vines, so much so that the profits on their crop was very small. This seems to have affected the early tomato worse than the late ones. Spraying with Bordeaux mixture will probably overcome the trouble. Most melon vines were troubled worse the past season with blight and wilt than in former years. For blight, persistent spraying will check the disease until the crop can be secured. For wilt, nothing is as sure as fire. The melon louse was very destructive on many patches. No practical way seems to have been devised as yet to reach his case. Men who study how to meet an emergency would do well to give these destructive insects some attention.

The potato crop has been only fairly good, a few fields yielding 200 bushels per acre, but the average crop being about 75 bushels per acre. The only redeeming thing about the crop being fair prices, selling from $4.00 for early to $1.50 per barrel for late. Cabbage made a medium crop, averaging about 60 cents per barrel.

While it seems some trouble, and is, the farmers and gardeners in the seventh district, by persistent spraying, would add to the value of their crops many thousands of dollars. As it is they do not realize 50 cents on the dollar for much of their labor and trouble.

No reports were given from the eighth and ninth districts.

Tenth District—Wm. M. Walton, Jr., LaPorte.

The season of 1910 has been the most disastrous ever experienced by the fruit growing interests of this section. The extremely warm weather of March brought out blossoms fully three weeks earlier than usual, and this, followed by a siege of winter weather the latter part of April, destroyed the biggest share of tree and bush fruit in blossom at the time. There were good prospects for strawberries, raspberries and blackberries, but the very dry weather from the latter part of May until the latter part of July cut these fruits to a very light yield throughout the greater portion of the tenth district. Strawberries, however, did fairly well considering the high prices received for them.

The tenth district comprises the counties of Tippecanoe, Warren, Benton, White, Newton, Jasper, Lake, Porter and LaPorte. I have made an effort to get information from growers in every county, but failed com-

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pletely, having received but one reply, and that of a disappointing nature. The consequence is, I can give only an account of conditions that exist in LaPorte county that I am familiar with, and if this report seems partial to this county, it is only because I have been unable to learn of conditions existing in other parts of our district.

While there has been considerable fruit raised throughout this district in past years, the acreage set to commercial orcharding is very small considering the possibilities that exist for profitable returns. The extreme southern and northern parts have a variety of soils well adapted to the raising of all kinds of fruit. The counties intervening have considerable low land better suited for the raising of corn, potatoes and onions, from which handsome revenues are derived. The onion industry of the southern part of LaPorte and Porter County has grown by leaps and bounds the last few years, and hundreds of acres are now planted yearly.

Some of the best fruit lands of the State are to be found in the northern part of LaPorte county. It is high, rolling, sandy clay soil so situated that it gets the benefit of Lake Michigan, which tempers the winters and lessens the danger of spring frosts. It also contains myriads of small lakes that are beneficial to fruit raising. This land is in the famous Michigan Fruit Belt, but only of recent years has attention been called to the bounteous yields of choice fruit obtained. Peaches, pears, apples, grapes, melons and small fruits do remarkably well in this soil when properly cared for, and with the excellent marketing facilities offered by the several electric and steam roads interspersing this land, it is little wonder that men of money are planting numerous young orchards.

In my opinion, there is no land in the State more favorably located or better adapted to fruit growing than we have in this particular part. With splendid fruit lands, lake influence, railroad facilities and an unlimited market for produce right at our door, we could not ask for more.

LaPorte county has a flourishing Fruit Growers Association organized last January that has given a big impetus to fruit growing. The association has at present a membership of fifty-six, all deeply interested in modern methods of fruit culture. The officers are: N. T. Jenks, President; Wm. M. Walton, Jr., Vice-President; Harry L. Stanton, Secretary; D. J. Henry, Treasurer; and Julius C. Travis, Wm. M. Walton, and Dr. David H. Reeder, members of the Executive Board. The association buys all spraying materials and implements used, at a big saving to the members. Last season the Rex Solutions and Morrell & Morley Pumps were chosen for meeting all present needs. Three hundred and forty-six dollars was spent for spray solutions, and $175.50 for pumps, last spring, which goes to show that considerable spraying was done, especially so when one knows

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that a great many of the growers make their own mixtures. Five meetings have been held since organizing, and growers are becoming familiar with the latest methods of spraying, pruning, fertilizing and general care of their orchards, and working toward the eradication of insects and diseases throughout this entire section.

Some of the most prominent orchards throughout this vicinity are of small acreage, ranging from five to thirty acres.

Mr. Harry L. Stanton, the energetic secretary of the association, has a splendid orchard, comprising ten acres of apples, peaches, pears and plums. The latest methods of pruning, spraying, thinning and packing are practiced by him, and as a result, his orchard is paying well.

Mr. N. T. Jenks, president of the association, has an eight-acre orchard of peaches that will compare most favorably with any in the State. He has a two-acre block of trees that have borne five successive crops previous to 1910, from which a net profit of over a thousand dollars an acre was obtained.

Dr. David H. Reeder, one of LaPorte's most enthusiastic horticulturists, planted last spring a twenty-acre orchard of apples, with peaches as fillers, also three acres entirely with peaches. He already has eight acres of apples and peaches in bearing that give promise of handsome returns.

Don. J. Henry, son of the late H. W. Henry, is carrying on the strawberry business that his father was engaged in. He plants yearly from ten to fifteen acres, more especially for the selling of plants, and figures his net profits at two hundred dollars an acre and up.

Our own orchards comprise thirty acres set to apples, pears, plums, cherries and peaches, with twenty acres of currants and gooseberries set between the rows of trees. We find this to be quite an advantage with our currants and gooseberries, as they do better in shade and it is also an advantage in orchard heating, as the trees aid a good deal in retaining the heat. We fertilize heavily in order that the small fruits may not draw upon the vitality of the trees, and in this way, we get double crops from our land.

I might go on and name scores of others with orchards just as well cared for, but the ones mentioned will give some idea of the fruit raised, and with prospects bright for a big yield, the tenth district is sure to be heard from in 1911.

Twelfth District—A. H. Bogue, LaGrange.

In making my report for 1910 I find it will be necessary to repeat much that has been said of this district. While it is true that in some localities we are alive and deeply interested in horticulture, it is equally as true that at least 75 per cent. of the farmers cannot as yet be brought to realize the

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advantage or the possibilities in the line of fruit growing that can easily be attained, and while we have the soil suitable and the advantage of easy marketing, how shall we be enabled to convince this large per cent. of that fact? The educational movement along this line is doing a great work and prominent among the many agents in this direction are the practical field demonstrations of the Purdue Department of Horticulture together with the bulletins and lectures. These are of untold value to the farmer and fruit grower who take advantage of them but if you go out over the country and talk with the majority of farmers about the growing of apples and small fruit, they will tell you that if they were to grow them they could not find a market. This is a mistake on their part and would not have occurred had they ever tried to grow or sell them. There is a demand for apples and this is proven by a storage plant located in this district at Fort Wayne, and I am informed that not one-half of the apples stored in it are grown in the State. Now the reason for this it seems to me is that Indiana does not pay as much attention to the growing of merchantable apples as do other States. There is not enough spraying and cultivation done. While a few of the orchards are properly taken care of, the majority are neglected and the buyer who wants a quantity of apples can and will pay a better price if he can get them in one neighborhood, for the reason that he can handle them to a better advantage. This shows the need of organizing and helping one another in order to get better results. Fruits of all kinds have brought good prices and the grower who has succeeded in producing it has been well paid for his work and money invested. All kinds of fruit in this district have been below the average. Apples were less than half a crop, the quality in most localities was fairly good. The early spring gave promise of an abundant crop, as the trees were loaded with blossoms, but a heavy frost at the time the blossoms were falling killed a majority of them. Peaches were nearly a failure for the same reason. Pears were an average crop and quality fine. Plums, cherries and strawberries were light crops. Potatoes were fairly good and the quality fine.

Thirteenth District—GEORGE MATTHEWS, South Bend.

The Thirteenth District is located at the northern part of the State adjoining the famous fruit belt of Michigan; the average elevation is about 800 feet, much of the land being rolling, making many ideal locations for fruit growing. The soil varies from light sand to heavy clay and is adapted to a great variety of fruit.

At an early day apple growing was practiced more extensively. Orchards were productive and many carloads of fine fruit were shipped annually. The destruction of the forests left the orchards unprotected; then

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with the advent of insect pests and fungous diseases, farmers became discouraged and ceased to care for their orchards.

With our favorable location, soil and climatic conditions, there is no reason why fruit growing in all its branches cannot be made a success with proper care and attention.

A system of reforesting on the rougher lands would be an aid to this end. As proof of the adaptability of this section for fruit growing we may cite a few examples. The range of hills in the northeast portion of Elkhart county is almost exclusively and successfully devoted to fruit growing. Among the successful growers, Henry Milborn is quite prominent. In Kosciusko county the many small lakes afford protection from frosts, thus making it desirable for fruit culture. While Fulton and Marshall are more strictly agricultural counties, fruit is successfully grown. A. B. Seibert of Fulton county is an extensive grower of small fruits.

While Pulaski and Starke are not so well suited to fruit growing as other portions of the district, much fine fruit is also produced in these counties. Joseph Koerner of Pulaski is a prominent fruit grower.

There are a large number of small orchards in St. Joseph county; grapes and small fruits are successfully grown. A few persons are engaged in growing melons and find a profitable home market.

Owing to the severe April freeze, all fruit except strawberries was practically a failure but the prospect looks good for next year.

SMALL FRUITS FOR HOME AND WHOLESALE MARKET IN NORTHERN INDIANA.

W. M. Walton, Jr., LaPorte.

Mr. President, Ladies and Gentlemen: The subject assigned me to talk on is "Small Fruits for Home and Wholesale Market in Northern Indiana," but being most deeply interested in the currant and gooseberry culture, I will confine my talk to these two fruits, as the cultural methods of both are very similar.

There is hardly a garden but has one or more of these bushes, and as a general rule, they are left to shift for themselves and stand as best they can the ravages of disease and insect pests in general. While they stand up under this neglect and bear considerable fruit for some time, they finally succumb to the ill treatment. Given care and attention, however, they will respond with splendid growth and fruit that more than repays one for the time and trouble spent with them.

The first thing for one to take into consideration before planting to any great extent of currants or gooseberries, is the availability of pickers at the proper time. With this problem settled and proper railroad facili-

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ties, one will want good, rich soil, moderately well drained and high enough to avoid as much as possible the late spring frosts.

The currant is propagated by cuttings taken in the fall from the new growth, and buried in the ground over winter with the buds pointing down. This allows cuts to callous over and they are ready for transplanting to the nursery row the following spring with cuttings about six inches apart in the row. Clean cultivation should follow, and one or two years will give good strong healthy plants for setting in the permanent bed the following fall, sufficiently deep to insure bush growth, which I consider preferable to the tree form. These plants should be set in rows checked about 6½ feet one way, and 4½ the other, allowing cultivation in both directions, which saves considerable hand labor. The best implements used for loosening the soil are the double-shovel plow and spring-tooth harrow. They should be used all through the growing season, keeping the ground well stirred and forming a dust mulch which will prevent injury from drouth.

The gooseberry is sometimes propagated by cuttings, but more often by laying down branches in the fall or spring and covering with earth. These take root and new plants form, which may be set in the nursery row and after a year or two of cultivation, transplanted to the permanent bed, after which the treatment is the same as that of the currant.

The secret of success in the growing of these two fruits is eternal vigilance in spraying, for by neglecting to do so, one is bound to fail. We use arsenate of lead at the rate of 2½ to 3 pounds to 50 gallons of water for the currant worm with its two broods, the first hatching just after the leaves appear, and the second coming a little before picking time. It is very essential that one apply this spray in the early stages, for it takes but a day or two for them to strip a bush of all its foliage, weakening its vitality and increasing the chances of sun scald.

We also have a little orange colored louse that sucks the green chlorofil of the leaves and punctures the young and growing fruit, causing the seeds to pop out and berry to ripen prematurely, the result being that when picking time comes, one will find a number of dried up berries on a cluster, which spoils them for commercial purposes. It is also very injurious to the bushes, and if allowed to carry on its work, will kill them in a couple of years.

We have found that factory boiled lime sulphur applied every week or ten days during the growing season at the rate of one to forty will hold them in check. There seems to be no set period for their hatching, and thus the necessity of an all season's spraying.

This louse not only attacks the currant and gooseberry, but will also

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be found on potatoes and numerous varieties of weeds, this fact alone being one strong point in favor of clean cultivation.

The San Jose and Scurfy scales also attack these fruits, but are easily held in check by the winter application of lime sulphur solution at the rate of one to ten.

The currant cane borer also becomes quite a nuisance at times, the only remedy being to cut out and burn all infested branches as soon as noticed.

We have had of late years an orange colored fungous growth that attacks the leaf fruit and growing shoot of the gooseberry. It starts as a tiny orange colored speck and grows until it will measure an eighth or quarter of an inch in diameter and resembles very closely a cluster of small eggs. It causes the premature loss of foliage and ruins the fruit affected.

We find that Bordeaux mixture applied while foliage is just appearing is more effective in holding this disease in check than is lime sulphur.

So much for insects and diseases. Picking should start while fruit is a trifle green. The gooseberries are generally started on when two-thirds grown, as this will allow one to get them out of the way for the currants, which should be picked while turning. If one waits for them to ripen, he will find they get too ripe before all can be picked, and in this condition can not be shipped.

Nothing but first-class fruit should be put on the market, with the grower's name attached, and one should strive to establish a reputation for choice fruit, honestly packed. These fruits are generally put up in 16 or 24-quart cases, the Southern market preferring the 24-quart case. If shipping to commission houses, one should choose good, reliable firms and confine his business to these men as long as honest dealing prevails.

Having tried to give some idea as to the propagating, cultivating, spraying and marketing, I have but one more point to talk on before closing, and were I to omit this particular phase of fruit growing, I surely would be failing to mention one of the greatest chances we have for profitable fruit raising, regardless of location.

It seems folly for one to spend time and money in the care of trees and bushes to have all chances for profitable returns lost in a night or two of spring frosts, and I am positive that with proper equipment, such as oil storage tank, thermostat and a good, reliable orchard heater, one can save his entire crop under any ordinary season. We have practiced orchard heating for the last four years, but only after a crude fashion, until last spring, when we ordered five hundred Troutman heaters to be placed in five acres of cherries, plums, pears and apples, with currants and gooseberries

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set between the rows. The heaters were placed in the orchard the last of March, being set about twenty feet apart each way. Our first frost settled at 6:30 on the evening of April 6th. Heaters were lighted at once and continued to burn until sun up, having been refilled during the night. The following night a still harder frost settled at 7:00 p. m., and although the mercury dropped to 26 and lower in the unheated area, we had no trouble at all keeping our five acres above the freezing point. April 12th we had still another heavy frost, settling at 11:00 p. m., and went through the night in fine style. Up until April 22d our fruit prospects were never brighter, and especially so in the heated area; currant bushes hung just as full as could be with ten to thirteen berries on a cluster, and not a blossom in that five acres could be found that had been nipped. Outside the heated portion the currant clusters were not as full, having but five or six berries on a stem, and considerable damage was noticeable on the unprotected cherry blossoms, which went to prove that benefit had been derived from heating. It is needless to say we were well pleased with our efforts, but at this point, nature seeming to see our joy in subduing her elements, came forth in all her fury with a storm so fierce that, do what we might, we could not hold our own, and after a bitter fight throughout the night of April 22d and day of the 23d, we had to acknowledge our incompetency in dealing with her when in a mighty rage. Not satisfied with our acknowledged defeat, she continued her chilling blasts throughout several days, and as a result did not leave a trace of what promised to be a golden harvest.

It was an awful blow to lose all, but, nevertheless, there is a great deal of satisfaction in knowing that one fought, and fought hard, to retain his own. It is not at all probable that we will have such another spring during the life of any of us, and with the success achieved during the early frosts, there is no reason to doubt but what we can carry our orchards through any ordinary season and come out with a feeling of satisfaction and profitable returns.

DISCUSSION.

Mr. Stout—I would like to know how he harvests and markets his fruit.

Mr. Walton—We generally pack our fruit in 16 or 24-quart cases and generally when we send to a distance, we send to commission men. There are a good many cities around us, and sometimes we sell direct to the merchants. This saves us the commission, but we have found that when picking time comes we do not confine our shipping to commission men with good results. Of course sometimes we get a man that wants to get the better end, but we have overcome that with the Fruit Growers' Associa-

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tion. We have not started to sell through the association, but intend to do so. When we find a man that wants to take more than his share, we report it to the Fruit Growers' Association. We never have any trouble to get help. It is harder to get help with a small crop than with a large one. We pay a cent to a cent and a half per quart for picking. We never strip gooseberries, but have them picked clean. Our overseer keeps right along with the pickers. They bring the berries to the shed and they are put in boxes and nailed up for shipping.

Mr. Stout—We tried growing gooseberries on a small scale, but it is almost impossible to get pickers.

Mr. Walton—Perhaps we are more favored than most people, as there are always gangs of men going through the country to pick fruit during the whole season, and they drift along up into Michigan. They make good money at a cent and a half per quart. They wear gloves and can pick very fast. We have twenty acres in currants and gooseberries, but we have never had a full crop from more than five acres. Next year if we find that we have too much fruit to handle, we are going to Chicago, and there you will find Italian laborers and they will come and pick and will bunk in any old shed and get along anyway.

Mr. Swaim—I wish Mr. Walton or some one would tell us why the gooseberry, which is an excellent fruit, is always picked green.

Mr. Walton—As soon as you yet your gooseberries get ripe, people do not want them. When ripe the ends of them crack open, and that is why we pick them green. The commission men want the fruit when it is solid. We grow principally the Joselyn variety, but the Chautauqua is good and very large but not as hardy as the Joselyn.

Mr. Mock—I think we have some ladies among us who can answer the question as to why the berries are picked green. When people want to can gooseberries they want them green.

Mrs. Stout—Because the skin is tough and will stand up better. They cook to pieces too much when fully ripe.

Mr. Henby—The speaker spoke of the fires. I think the heat might be of value to us. Perhaps he can tell us what he will do next year.

Mr. Walton—We figured on using the heaters. We generally think the frost settles about midnight, so we only have them to burn five or six hours. That is all right if the frost settles at midnight, but sometimes it settles earlier, and next year we will use the heaters we have, and if we have to use more, we will get a larger size, which will save filling, as it is a big job to refill during the night. If anyone contemplates heating, I would

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advise putting your money into a cistern which will hold 5,500 gallons. We ordered the heaters and did not know how many we would use until late in the season, so I saw the Standard Oil Company and they sold oil at 7 cents per gallon. If you can get it in tank cars you can get it for 2 cents, but we had to get it in barrels. They sent twenty barrels and we used it up in no time. If you can get 5,500 gallon cisterns, you can buy it for 2 cents per gallon. You see we paid enough for a couple of cisterns and had none either. We won't buy any more oil in barrels after this. After we lost all the fruit, we had 1 5-6 acres of strawberries, and we put our efforts in on them. In May we had a heavy frost and put the heaters in the strawberry bed and we went through the frost when the thermometer got down to 24 degrees, and from that 1 5-6 acres we took off $685.00 worth of berries. I am positive that heaters will save the fruit. You can get a thermostat and set it in the orchard with a bell to your room and when it gets cold you can go out and get busy.

THE FIRST STEP TOWARD HORTICULTURAL SALVATION—THE SPRAY MACHINE, THE PRUNING SAW AND "THE MAN BEHIND THE GUN."

Mr. T. A. FARRAND, Eaton Rapids, Mich.

Ladies and Gentlemen—It is a pleasure to me to be at your meeting today, as I see some familiar faces and I would be unfitted to talk on the topic given me if I had not done some little work in your State along horticultural lines. I wish to extend from the Michigan Horticultural Society the most hearty greetings to your society and the work you are doing. It is hard for me to be here today on account of the conflict in dates, and one or the other of us will have to change if we do anything in the way of exchanging back and forth. We are States that are closely connected and the conditions are much the same, and we ought to make arrangements so that we can exchange, as we do not like to leave our meeting, and you do not like to leave yours, but your Secretary has a very persistent way of sending letters every week saying that I was on the program, and I saw no way but to come.

The first step in horticultural salvation is to realize your condition and the depths to which you have gone before you can do anything in the way of salvation. Having been over your State, I realize that you have the same conditions that we have. The condition is at a very low ebb in horticultural lines, as in many sections of Michigan. Where they did grow a large quantity of fruit at one time, they have gone to corn and hogs and let horticultural interests die, but there is a change taking place, and I believe it is so in Indiana as well. You have been asleep as we have in

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many respects, allowing others for the past ten or fifteen years to do something which you might have done yourself and supply an article which you could have supplied at home with great profit. That is the horticultural condition that exists in a large portion of the State of Indiana. The first step, of course, would be to realize the condition, and then wake up and do something. You can only do that by conserving what you have and by planting more fruit. Last year I found some one who said, "Yes, we used to grow apples, but we don't do it any more." If they did once, they can do it again. These failures come from disease and insects, and the growers do not take the necessary precautions against them. Certainly you can grow apples. The apple is the king of all fruits and is the best all around fruit there is, and there is a great field for the planting of orchards and furninshing in your own State that for which you pay millions every year to others to grow for you. The Western States are shipping apples by the thousands of car loads when we might grow them ourselves. The planting of orchards will soon make it possible to grow them for ourselves. There is no question about the profit of growing fruit. I have done some little work along the line of renovating apple orchards and I know the possibilities of taking care of them. I became interested in apple growing three or four years ago and saw orchards doing nothing, and conceived the idea of taking care of them, and we have the results. I have not been so much interested in the planting of apple orchards as in the taking care of what we already have. I would recommend the planting of orchards as well as taking care of those we now have. You have not as many orchards in your State as we have in Michigan. In farming communities there are little orchards scattered all over, of our very best varieties, and the demonstration work that we have done in the way of taking care of orchards has been the means of bringing great results, because other people have followed what we have done and have got the same results. If you are going to plant orchards, it is wise to plant those that you know will bring the best results and best prices. It seems to me it would be unwise to plant Ben Davis when you can plant Grimes and other kinds that bring lots of money. The good varieties will always bring better prices and will bear just as well. In planting new orchards the first question is the selection of varieties that are adapted to your section. Then take care of them after you get them planted. Use good locations in planting. Use the higher rolling ground where you can get air drainage to help in times of frost. We all know that low grounds are easily frosted and high grounds are better. Plant your orchards on high rolling ground. Choose the best land and not the poorest.

Ninety-five per cent. of our good results have come from spraying. It is the last thing you can get a man who is not a fruit grower to do. He will prune his trees and can be induced to cultivate them, but spraying

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has always been the one thing that kept people from taking care of the orchards and getting the best results. They hated the job of spraying. Of course a study of the spraying problem is necessary and we are today in a state of doubt, to some extent, as to our spraying formula. We don't know as much as we would like to about spray mixtures, and it will take perhaps a year more to learn about them. But spraying is absolutely necessary if you are going to do anything in the line of horticultural work. You have the spray formula, equipment and everything that goes with it, but you can not do anything without spraying. Pruning is essential also. The cleaning out of dead branches and thinning the wood, stimulates the growth of the tree, and helps it to perform its proper function. I do not believe in pruning young trees as heavy as some people do, but after they get into bearing I believe in pruning. I do believe in heavy pruning of peaches. It is very necessary in getting the best results. Our whole object is to get first-class fruit. There always has been too much poor fruit and not enough first-class fruit. The first-class fruit always brings the prices. You can always sell a good article. The whole aim is to eliminate the poor and get first-class fruit. Spraying and pruning will do it. The man behind the gun is the principal thing. If you don't like fruit, don't grow it. The whole secret of success is to get interested in some particular line and put your mind on it, and then you will succeed. You have to like anything to make a success of it, and the man behind the gun is the one to get right next the load and go right into it. If you would come to my farm you would see a different looking man from what you see here. At home I am covered with grease and grime, but it is the only way to get results. We ourselves are right in the midst of the work, and that is why we get results. We can not be away and get results, as no one else will take the interest that we do ourselves. We are right in the business. I grow all kinds of fruit except, possibly, the gooseberry and currant, but the apple is my favorite. I grow some peaches, but it is a gamble. If you get a crop it will pay, but it is susceptible to winter injury in the bud and you don't know until spring, and then you don't know. With the apple, winter injury is rare. I honestly will say that this last spring is the first time I ever saw apples freeze in the spring. The apple and pear are hardy, but the apple is my special fruit because, if you don't want to sell your apples today, you can save them until next month. Small fruit is good, but there is not as much money in it as in the apple. The man behind the gun has to like his business, whatever it is, and the more he likes it the more successful he will be. I believe a man can learn to like it. I was talking to a man yesterday who used to be a farmer but now is a fruit grower, and he said he never was as interested in farming as he is in fruit growing. You have to have a cheerful disposition to be a fruit grower. When you go to a fruit

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growers' meeting you find they are all cheerful, whether they had a good crop or not. I saw a man at a meeting who had thousands of trees frozen, but we had one of the greatest meetings you ever saw. They stick to it, and that is the spirit that will win out. That is one of the characteristics that the man behind the gun must have if he is in the fruit business. If I lose out one year I always think there is another year coming.

I don't know that I have anything to say about the pruning saw, but, of course, we do a large amount of pruning and we consider it necessary. We like to make a close, clean cut and we have to do a large amount of heavy cutting in our old orchards and it costs sometimes as high as 50 cents a tree to do it properly. In starting young orchards you can do a little every year and you hardly notice it. I prune any time except when the wood is frozen.

DISCUSSION.

Mr. Zion—Don't you think we can obviate pruning by selecting trees with four or five branches?

Mr. Farrand—I have had no experience in that line. I have planted young orchards but I have to prune them.

Mr. Zion—Every time you prune a tree you cut off and weaken the tree, and I think you should prune as little as possible. Start in with four or five main branches on your apple trees. The branches should come out here and there up and down the tree trunk.

Mr. Smith—Is there not a difference in varieties?

Mr. Farrand—There is as much difference in varieties of trees as with people. Only allow the main limbs to remain and you will have better results in your orchard.

Mr. Zion—I have an orchard that has not been pruned in twenty years. Never prune an orchard if you can help it. Of course I admit that you should take out dead limbs.

Mr. Farrand—I think you can overdo the pruning in a young orchard. Every time you prune a tree heavily you stimulate the growth and you will get a strong wood growth, but what we are after is fruit and as early in the life of the tree as possible. I prune my orchard every year and shall continue to do so.

Member—One of the objects of horticultural education is to convince the farmer and everyone who owns land, that he should raise fruit for himself. It is not so much the information for commercial orchardists, but to reach the farmers in the State. You should know how your tree grows. The average man does not know, and he must learn. He must learn how

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the tree will look fifteen or twenty years from now. You must stimulate his imagination at that point, and I believe information as to pruning is more needed than anything else. People spend thousands of dollars every year for trees, but they have no idea as to what to do with the pruning, and it is as necessary as the spraying. A friend of mine said that he saw more apples between Kokomo and Logansport than any place in his travels over the States of Ohio and Indiana.

Mr. Farrand—I can not tell you how to prune a tree. I can do it for you, but I can not tell you how. A man told me once that he always had a doubt about the Darwinian theory until he saw me climb a tree. (Laughter.)

Mr. Beaver—Do you have reference to the pruning of the smaller bearing branches through the tree, or just the main limbs?

Mr. Farrand—I don't like to cut out large limbs, but we have to do it. Some people say you do not have to cut off limbs larger than your thumb. We prune out some of the small growth and even on the ends of some branches. There is too much stress laid on pruning.

Mr. Kingsbury—Tell us about spraying implements and what every farmer should have.

Mr. Farrand—Farmers do not need anything but a good hand pump. You can get a good hand pump very reasonable, and there is nothing that will pay better. Get catalogues and find out about the good pumps. The farmer wants the spraying bulletins from your experiment station, and wants to tack them up in his barn where he can see them. You should have a spray calendar with explicit directions, and they are glad to send them to you.

Mr. Flick—Mr. Farrand spoke of new things in spraying. I should like to know if there is anything to substitute for Bordeaux?

Mr. Farrand—I am satisfied to use lime sulphur as a summer spray. I did a little work this summer, or intended to have some done, but the young man got mixed on the amount to use and we did not get as good results as we expected, but I know fruit growers who have used lime sulphur, and one man says he would not use a pound of vitriol for anything.

Prof. Woodbury—What shape ought an orchard to be in to justify renovation? What is your basis in taking old orchards to renovate?

Mr. Farrand—I do not know. We have an orchard at Eaton Rapids that is sixty years old that we took and it cost us $80.00 to cut the dead wood out, and still it paid us. I believe in keeping the orchards low down

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so you can do your work as near to you as possible. This year we did not have a profit, but the year before we had a large crop of apples. I wish you might see that old sixty-year-old orchard. All we have done is to prune and spray. I have done so much with pruning and spraying that I have not come to the use of fertilizers yet. I wish I had some of the apples here that looked like they needed feeding, but it was a dry summer and it was not food they needed, but water. You must have moisture to make an apple good size. The difference between an orchard in sod and one under cultivation is that the one under cultivation forms a mulch to conserve moisture and your fruit must be large. I can show you an orchard, however, that is well mulched, and in sod, with the fruit as large as with cultivation. I believe in cultivation of the orchard. I would not cut off the low branches in order to get under the tree with a plow. When we first started to spray, before we had good equipment, there would be apples up in the tree all wormy and scabby, while where we could get at them was nice, clean fruit. Never cut off old limbs in order to get under them. There is no question about mulching if you can get stuff to mulch with. I would not head in my trees. Some think it is good, but I am not ready to say that it is so.

Mr. Lindley—What is your method of contracting for your neighbors' trees?

Mr. Farrand—If I could keep my mouth shut, I might have got some good orchards in Michigan that I did not get. We have some orchards that would go as low as ten cents per tree, and from that up, depending on the varieties and condition of the trees and the size of the orchard and distance from the station. I do not rent for less than five years.

Mr. Smith—May I tell you how I made a pruning saw? I took a part of the rim of a buggy wheel about three feet long and sawed a slot and put a blade of a wood saw in and fastened it, then fixed a handle on it five or six feet long and I could reach any limb on the tree.

Prof. Troop—Last week I was in Chicago attending the apple show, and I took particular interest in their Grimes Golden, because I knew that was one of our principal varieties, and I wanted to see how much better they were than ours. I looked over all the exhibits, and I want to say that I did not see a box of Grimes Golden that would come up to the Indiana grown Grimes Golden in size, and we know they do not come anywhere near us in quality, so I was proud of our Hoosier Grimes Golden. I was proud when Mr. Burton told us that they brought in $1,200 per acre, and I was proud that they could not touch us on Grimes Golden. Indiana can grow just as fine apples as they can show up there, and I made one of their land agents acknowledge it.

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THE DILUTE LIME-SULPHUR SPRAYS VERSUS BORDEAUX MIXTURE FOR APPLE DISEASES—IS BORDEAUX TO BE ABANDONED?

J. W. Roberts, Scientific Assistant, Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D. C.

Bordeaux mixture has been the standard fungicide for the control of apple diseases since spraying apple orchards came into vogue. It has made profitable apple growing possible where it would otherwise have been a failure, and has been the means of untold wealth to the commercial apple

Fig. 1—York Imperial tree sprayed with lime-sulphur, showing luxuriant foliage.

growers of the country. It has formed practically the sole remedy for apple scab, bitter rot and various apple leaf-diseases, and has been universally used on grapes, potatoes and other crops. In recent years, however, there has developed a very serious objection to the use of Bordeaux mixture as a fungicide on the apple, owing to the injurious effect it produces on both fruit and foliage. The fruit of many varieties like the Ben Davis and Jonathan becomes russeted and often dwarfed and distorted from the toxic action of the copper in the Bordeaux. This injury is produced mainly by the applications made within three or four weeks after the blossom petals fall, and is especially serious in a wet spring. Mid-season or late spraying, such as is required for bitter rot, rarely russets the fruit, the skin at that time having become tougher and more resistant. The skin of the young

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fruit is injured by the copper, and as the apple develops, the injured portions enlarge, resulting in russet blotches and streaks. In wet seasons the russeting of the fruit is sometimes so serious as to reduce its market value 25 per cent., or in some cases even 50 per cent.

The pathologists and apple growers have, therefore, been driven to seek a less caustic fungicide, and the result has been the development of various lime-sulphur preparations. During the past four years the Bureau of Plant Industry has been conducting experiments with lime-sulphur fungicides, and the results have been such as to warrant the recommendation of dilute lime-sulphur solution as a substitute for Bordeaux mixture in a large part of the apple spraying operations.

THE LIME-SULPHUR SPRAYS.

For two or three decades a preparation known as the lime-sulphur wash has been used in the dormant season for the control of the San Jose scale and other scale insects. It has been known for years that the same spray applied to peach trees in the early spring two or three weeks before they bloom would prevent peach leaf-curl, and it is now a common practice to spray for scale and leaf-curl at the same time, using the lime-sulphur wash. The lime-sulphur solution, now rapidly coming into use as a summer spray for apples, is only a modification of the old lime-sulphur wash.

Home-made Lime-sulphur Solution.—Concentrated lime-sulphur solution to be diluted and used as a summer spray on apples may be prepared as follows: Boil 16 pounds of sulphur and 8 pounds of lime with 10 gallons of water for about an hour, finishing with 8 gallons of concentrated solution. Then strain and dilute it with water to make 200 gallons of spray. This makes 4 pounds of sulphur in each 50 gallons of spray, which, in our experiments, has proved to be about the right strength. It may be made in larger quantities by using 100 pounds of sulphur and 50 pounds of lime and boiling them together with enough water to finish with 50 gallons of concentrated solution. The boiling may be done in a kettle over a fire, or in a barrel or other tank with steam. In diluting for summer spraying 2 gallons of this solution should be used in 50 gallons of water. Used at this strength in our experiments it controlled apple scab, leaf-spot, and cedar rust, fully as well as Bordeaux mixture, without seriously injuring the fruit or foliage.

Commercial Lime-sulphur Solution.—A number of manufacturers are now placing on the market concentrated lime-sulphur solutions to be used as a fungicide and an insecticide. Most of these preparations test 32° to 33° on the Baume hydrometer and contain in solution about 2½ to 2¾ pounds of sulphur to each gallon. They are practically the same as the

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home-made solution, but are a little more concentrated and therefore require more dilution. A strength of 1½ gallons of the solution to 50 gallons of water gives about 4 pounds of sulphur in each 50 gallons of spray, and produces the same results as the home-made solution diluted to contain the same amount of sulphur.

We have experimented with several different brands of these commercial products and have found very little difference in them. All that were tested gave fairly uniform results and compared favorably with the home-made solution. It appears, therefore, that, except in the matter of cost,

FIG. 2—Unsprayed York Imperial tree almost defoliated by leaf spot, located in the same orchard and photographed at the same time as that shown in Fig. 1.

it makes very little difference whether the preparation is purchased from the factory or made at home. The home-made product is less expensive but more troublesome.

RESULTS OF EXPERIMENTS.

Experiments comparing the lime-sulphur preparations with Bordeaux mixture in the treatment of apple diseases have been conducted by the Bureau of Plant Industry in Virginia, Michigan, Nebraska, Missouri, and Arkansas. Excepting bitter rot and blotch, all diseases of the fruit and foliage in all the experiments were as thoroughly controlled by the lime-sulphur solution as by the Bordeaux mixture. The lime-sulphur produced very little or no russeting of the fruit and no serious foliage injury, while the Bordeaux

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injured both fruit and foliage of Ben Davis, Jonathan, Yellow Newton, and some other varieties. The lime-sulphur sprayed fruit was invariably superior in appearance to that sprayed with Bordeaux.

Experiments for the control of apple scab on Winesap were conducted in Virginia during 1909 with the following results: On the plots sprayed with lime-sulphur solution less than one per cent. of the fruit was affected with scab; on that sprayed with Bordeaux mixture about two per cent. of the fruit was affected; and on the check or unsprayed plot thirty per cent. of the fruit was scabby.

During the same year similar experiments were conducted in Michigan with like results. The scab was held down to four per cent. of the crop by the lime sulphur solution and to three and one-half per cent. by Bordeaux mixture while eighty per cent. of the unsprayed fruit of the same variety (Wagener) was affected.

In both the Virginia and the Michigan experiments the commercial lime-sulphur solution at a strength of 2 to 50 slightly scorched the leaves particularly on the terminal shoots, but this did not prove to be serious and at the end of the season the foliage was in good condition, the apple leaf-spot having been controlled and the cedar rust held in check. It was found also that arsenate of lead used with the lime-sulphur solution did not result in injury to fruit or foliage and that it controlled codling moth as thoroughly as when combined with Bordeaux mixture. A full account of these experiments was published in Circular 54 of the Bureau of Plant Industry.

EXPERIMENTS OF 1910.

During the past season experiments were conducted at Waynesboro, Va., on Winesap, York Imperial and Ben Davis. From 75 to 200 trees of each variety were sprayed and a check of about ten trees of each variety was left unsprayed Each variety was divided into 4 plots and treated as follows:

Plot 1. Commercial lime-sulphur solution, 1¼ to 50, with 2 pounds, arsenate of lead.

Plot 2. Home-made lime-sulphur solution, 2 pounds of lime and 4 pounds sulphur to 50 gallons water, with 2 pounds arsenate of lead.

Plot 3. Bordeaux mixture, 3 pounds bluestone and 4 pounds lime to 50 gallons of water, with 2 pounds arsenate of lead.

Plot 4. Check, not sprayed.

The Winesaps were sprayed, (1) after the cluster buds opened, just before they bloomed (April 5); (2) as soon as the petals fell (April 19); (3) three to four weeks later (May 17); and (4) nine weeks after the

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petals fell (June 26). The Ben Davis and York Imperial received only three treatments, the first application given the Winesaps having been omitted from these varieties, which in Virginia do not suffer seriously from attacks of scab.

Effect on the Foliage.—The weather was unusually cold and wet during April and May and the conditions were favorable for spray injury. Toward the end of May, soon after the second spraying of the Ben Davis and Yorks, the leaves of these varieties showed considerable spray injury on all the plots. On the lime-sulphur plots the leaves of the young shoots were somewhat scorched around the margins, and as a consequence, some of them were crooked or curled. A few dead spots appeared on some of

FIG. 3—Apples sprayed with commercial lime sulphur and arsenate of lead. Scabby fruit on right.

the leaves and at that time it looked as though the injury might prove serious. It did not progress any further, however, even after the next application, and the trees soon grew out of it. By midsummer nearly all evidence of injury had disappeared and during the remainder of the season the foliage was in excellent condition. In respect to injury there was practically no difference between the home-made and the commercial lime-sulphur.

Bordeaux mixture caused more injury than either of the lime-sulphur preparations and this injury increased as the season advanced. The leaves were more or less spotted with circular, brown areas and a considerable percentage of them turned yellow and dropped off. The trees sprayed with the lime-sulphur solutions went through the season with much better foliage than those sprayed with Bordeaux mixture, demonstrating the superiority of the former fungicide over the latter in this respect.

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The apple leaf-spot disease was controlled equally well by both fungicides. The lime-sulphur solution, however, showed some superiority over Bordeaux in controlling cedar rust. This disease seems to yield more readily to sulphur sprays than to copper sprays.

Effect on the Fruit.—There was practically no difference between the lime-sulphur solution and Bordeaux mixture in the control of the diseases that occurred on the fruit. Apple scab, fruit spot and sooty blotch were controlled equally well by both fungicides. In the case of the Ben Davis, particularly, however, there was a decided difference in the appearance of the fruit sprayed with the two kinds of fungicides. The fruit sprayed with Bordeaux was russeted considerably, although very little of it was dwarfed or distorted, as often occurs with Bordeaux sprayed fruit. The Winesaps were also russeted but not so much as the Ben Davis, while the York Imperial showed only a slight roughening of the skin. The latter variety is almost immune to Bordeaux russet.

The fruit of all varieties sprayed with the lime-sulphur solution was almost free from spray russet. The natural russet at the stem end was enlarged slightly and on some specimens this ran over on to the side of the apple, but as a rule, the fruit was smooth, clean, and highly colored. The high color and general appearance of this fruit would place it in a grade higher than that sprayed with Bordeaux which would mean 25 cents to 50 cents a barrel in price.

The Control of Apple Scab.—In order to determine the comparative efficiency of the sulphur and copper sprays in the control of apple scab, the fruit from four Winesap trees in each plot and six check trees was sorted and the results, in terms of percentage of fruit affected with scab, are given in the following table:

Table I.—Lime-sulphur solution vs. Bordeaux for apple scab.

No. of Plot.	Spray Mixture Used.	Per Cent. of Scabby Fruit.
1.	Commercial lime-sulphur solution (1¼ to 50) plus 2 pounds arsenate of lead	2.2
2.	Home boiled lime-sulphur solution (2-4-50) plus 2 pounds arsenate of lead	6.1
3.	Bordeaux mixture (3-4-50) plus 2 pounds arsenate of lead	6.2
4.	Check, not sprayed	99.8

It will be seen from this table that the home-made lime-sulphur solution and the Bordeaux mixture both held the scab down to about 6 per cent. of the crop, while practically all of the unsprayed fruit was scabby. The plot sprayed with the commercial solution had the lowest percentage of scabby fruit (2.2 per cent.), but this was probably due to a difference in

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the plots and not in the fungicides. Plot 1 contained medium sized trees easily sprayed, while the trees in plots 2 and 3 were large and rather difficult to spray.

It would seem from these results and those obtained in previous experiments that the efficiency of the lime-sulphur solution as a remedy for apple scab could no longer be questioned.

ADOPTION OF LIME SULPHUR IN VIRGINIA.

As a result of the experiments conducted in Virginia during 1909, by the Bureau of Plant Industry, practically all of the Virginia apple orchards were sprayed with the lime-sulphur solution during the past season. We personally examined some of these orchards and have had reports from many of them. In every case, so far as we have been able to ascertain,

FIG. 4—Unsprayed apples from the same orchard as those in Fig. 3. Scabby fruit on the right.

the results were satisfactory both as to the control of diseases and as to the effect of the spray on fruit and foliage. In the early part of the season there were a number of reports of injury to the young leaves, but in no case did this prove to be serious. In the Yellow Newton orchards where bitter rot is a serious factor, the lime-sulphur solution was used in the early treatments for scab and leaf-spot and this was followed by applications of Bordeaux for bitter rot. This plan was entirely successful, the russeting of the fruit having been avoided and the bitter rot disease controlled.

CONCLUSIONS AND RECOMMENDATIONS.

The evidence obtained from various experiments conducted by the U. S. Department of Agriculture, and several of the experiment stations, seems to warrant the following conclusions:

Bordeaux mixture often russets the fruit and injures the foliage of

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many varieties of apples, and its use in the early part of the season should therefore be avoided as much as possible.

Lime-sulphur solution, diluted so as to contain four pounds of sulphur in each fifty gallons of spray, is a good substitute for Bordeaux mixture in the treatment of apple scab and some other diseases, and will not materially russet the fruit nor injure the foliage. The concentrated solution may be purchased from the factory and diluted at the rate of 1½ gallons to 50 gallons of water or it may be prepared at home.

This fungicide will control apple scab, fruit spot, leaf-spot and cedar rust fully as well as Bordeaux mixture but has not yet proved to be as satisfactory for bitter rot. Where it is necessary to spray for this disease, the early lime-sulphur applications for scab may be followed at the proper time with Bordeaux for bitter rot, thus avoiding the russet and yet controlling the rot. There is also some doubt about the efficiency of lime-sulphur in controlling apple blotch and where this disease is bad Bordeaux should be used.

Arsenate of lead may be safely and successfully used in combination with the dilute lime-sulphur solution for the control of the codling moth and other insects.

The course of treatment best suited to Indiana orchards may be outlined as follows:

Use the commercial lime-sulphur at a strength of 1½ gallons to 50 gallons of water, or an equivalent strength of the home-made preparation, with the addition of 2 pounds of arsenate of lead in each 50 gallons of spray. Spray the trees: (1) as soon as the buds have opened, just before blooming; (2) as soon as the petals fall, beginning when they are two-thirds off; (3) three to four weeks later; and (4) nine to ten weeks after the petals have fallen.

Where it is necessary to spray for bitter rot the first three applications outlined above should be followed by two or three applications of Bordeaux mixture at intervals of two weeks, beginning about June 25 to July 1.

In mild cases of apple blotch the lime-sulphur treatment would probably be sufficient; but in severe cases two or three applications of Bordeaux will be required; the first to take the place of the third in the above outline and the others to follow at intervals of two weeks.

It need scarcely be said that spraying with lime-sulphur preparation in order to be effective must be thorough. So many fruit growers are careful enough with regard to everything else connected with spraying except the manner of application. A tree should be carefully sprayed limb by limb, beginning and ending at a particular point and the inside of

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the tree, the dampness of which favors the development of fungi and insects, should not be neglected.

In general, a pressure of something like 40 to 200 pounds should be maintained but with the latter pressure the rod should be kept in swift motion to avoid drenching. It should be the aim to lightly coat the entire tree.

Good agitation and a fine spray carefully applied at the proper times should bring excellent results with lime-sulphur preparations.

DISCUSSION.

Question—What is the proportion of the mixture?

Mr. Roberts—Four pounds of sulphur and half as much lime.

Mr. Zion—You refer to home made lime and sulphur as a spray.

Mr. Roberts—Yes, that is, not self-cooked.

Question—Will the lime-sulphur alone kill the codling moth?

Mr. Roberts—No.

Mr. Johnson—Wnat would be the injury if you drench the tree?

Mr. Roberts—None, but I simply prefer not to. Bordeaux injures after it gets a start and gets worse after the season goes on but the lime-sulphur injury is outgrown as the season advances. It differs from Bordeaux in that it keeps getting less and less serious whereas Bordeaux gets worse and worse

Mr. Eastman—Is there a possibility of using lime-sulphur for potatoes?

Mr. Roberts—I have talked with men about it and Bordeaux has such a good effect on potatoes that they would not think of changing to anything else.

Mr. DeVilbiss—I sprayed with lime-sulphur and arsenate of lead in the spring and had excellent results but found after I stopped spraying that I had about 3 gallons of precipitate in the bottom of the can after I had used about 4,000 gallons of spray material. Next year I am going to spray with arsenate of lead and then with lime and sulphur.

Mr. Roberts—Any time you use arsenate of lead you should be sure you have good agitation.

Mr. Flick—What effect has thus summer spraying of lime sulphur on San Jose scale?

Mr. Roberts—Very little effect. It is not strong enough.

Question—I would like to ask the effect of acid and non-acid arsenate of lead.

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Mr. Douglas—I believe it is better practice to get as nearly neutral arsenate of lead as possible.

Question—At what step do you add the arsenate of lead to the lime sulphur?

Mr. Roberts—Do it the last thing after the water and lime sulphur are in the tank. Some men carry it out to the orchard with them and put it in just before they start to spray so as to be sure it does not go to the bottom.

Question—In spraying for codling moth is there anything being done to kill the second brood of codling moth?

Answer—The object is to spray at the time the brood is hatching. If you spray at the proper time you would kill.

Member—There has been no information like that given out over the State.

Mr. Douglas—That is one of the things we have been trying to get people to follow out. It cannot be worked out in one part of the State and have the information sent out. The instructions we have been giving the farmers is to take wormy apples and put them into a cage which I think would consist of an ordinary fruit jar with a piece of muslin tied over it. Leave it in the orchard where the conditions are the same as in the tree. Watch the jar and when they appear, allow two or three days for egg laying and then get your arsenate of lead on the tree as quick as possible. Any farmer ought to be able to work that out for himself.

Question—Would you recommend lime-sulphur spray for cucumbers, melons and tomatoes?

Mr. Roberts—I have never worked lime sulphur on anything but apples.

Mr. Eastman—What reason can you give for its not being efficient on bitter rot?

Mr. Roberts—I think one reason is that lime sulphur is not quite as strong as fungicide.

Mr. Beaver—How strong would you put on commercial lime sulphur for the first spraying for scale?

Mr. Roberts—I generally use the standard formula. The lime sulphur I am discussing is only for summer spraying.

Mr. Wallace—Why do you recommend spraying when only three-fourths of the petals are off?

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Mr. Roberts—I believe I put it 2/3. It is only because a man is apt to be delayed in going through his orchard. If you have a small orchard, then wait until they are all off.

Mr. Zion—What injury would result from spraying when in bloom?

Mr. Roberts—I have sprayed when in bloom and not caused any injury. However, although I do not think I ever did cause an injury by spraying that way yet I suppose it is attended with quite a little risk.

Mr. Farrand—Three years ago we had a little rust. We thought we would cut the mixture to 3 pounds and this year we cut it down to 2 pounds, and we got 100 per cent. worse results. I am satisfied today that lime and sulphur is going to be the coming spray. I have been laying it all to Bordeaux injury until I saw apples all rusty which had not been sprayed and now I don't know what it is.

Prof. Woodbury—I saw an experiment last fall on an orchard in southern Ohio where Bordeaux had been tried pretty thoroughly in comparison with lime sulphur. There was a marked difference in both quantity and quality in the apples. On the lime-sulphur sprayed plot there was a fine crop and no trace of injury of any sort. The Bordeaux sprayed apples were almost entirely ruined with rust. The Ben Davis were really out of shape and the quantity of fruit was only about 10 per cent. of what it was on the lime sulphur sprayed apples. The Bordeaux injury cut down the total amount of fruit as well as causing severe russeting. The apples that were unsprayed were also badly russeted. The quantity was also much less but the injury not so great as on the Bordeaux sprayed apples.

Mr. Roberts—I feel that rainy weather often causes rust.

Mr. Farrand—I had Kieffer pears which were killed so that we could not raise them at all and there was not a single specimen that was not as badly russeted as anything I ever saw. While I have no data at hand to tell what the conditions were in regard to moisture at that time, I have records at home which I can look up and post myself on that point when I get home.

Mr. Walton—We had Wilder Early pears which were frozen solid and they began to drop off but some hung on and we had seedless pears that ripened and were not russetted at all.

Mr. Swaim—I had Bartletts which hung to the trees and matured and had very little russet.

Mr. Lindley—I sprayed three times with lime sulphur and I had the finest fruit I ever had. My results this year have proven to me that it is a fine spray to use.

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Mr. Roberts—There are two things I would like to point out; one is that we recommend lime sulphur for scab and another is that we have given some talk about home boiled lime sulphur and I took special pains last season to see if I could find any difference between apples sprayed with home boiled and factory boiled lime sulphur and I could see no difference and there is quite a difference in the cost. Less than half for home boiled.

Mr. Kingsbury—Have any of the fruit growers present noticed an increase in the number of ladybirds of late years? I think I have and I think they are taking care of the San Jose scale to some extent. It has not been as bad this last year as formerly.

Mr. Zion—There is a great increase in the number of ladybirds.

At the suggestion of Mr. Beck. Prof. Woodbury offered the following resolution on the sickness of Mr. Sylvester Johnson who was not able to be present.

"Resolved, That the society express its regard for Mr. Sylvester Johnson and send him a basket of good Indiana apples and that the president appoint a man to take them to him." (Carried.)

Mr. Beck was appointed to carry the apples to Mr. Johnson and also to express to him the good wishes of the society.

THURSDAY AFTERNOON SESSION.

REPORTS OF OFFICERS AND COMMITTEES.

Report of Superintendent of Experimental Orchard, Mr. Joe A. Burton, Read by Prof. Woodbury.

The 1910 crop was not as full as we expected. Some varieties did well. Fruit was larger than usual, probably due to excessive rains. In the nursery plot about three-fourths of the trees bore some apples. This was quite a boon to the management as it enabled us to condemn about two-thirds of the trees as being no better than already known varieties. These trees were so thick that they could not properly develop their fruit, neither could I properly spray them. Nearly all these seedlings would be fairly good varieties but we can't claim that any of them are worthy to supersede our best known varieties. We have some very promising. One, ripening with Wealthy, surpasses Wealthy in some respects. It bears more, colors better, is larger and a better cooker. It however, is not desirable to eat out of hand. It sold in Indianapolis market at $2.00 per bushel. Another apple of great interest is of unknown parentage. It is in

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every respect a reproduction of the Hoop, both tree and fruit. If it is a Hoop seedling it is probably the nearest a thoroughbred of any apple in existence. Among all our seedlings there have been no reproductions. Our attempts at breeding pedigreed apples have not resulted in success. They have generally been inferior to those pollenized naturally. One cross of Ben Davis on Genet gave a good apple. I have five inbred Grimes on one tree. Two of them bore this season and both were worthless. Rome Beauty on Genet gave a small worthless sweet. We have 25 or 30 seedlings quite promising. The two of greatest promise are Winesaps.

Among the comparatively new varieties is Springdale. It is very late, a great producer, good size and if it ever ripens may be valuable. Stayman lost some of its former standing by cracking badly but it was enormous in size. Babbit sustains its good reputation. Fannie was very promising for a while but when ripe there was not a perfect apple. Baldwin bore full, apples large but nearly all fell before gathering time. Greening did the same way only worse. King rots too badly to be useful. York did fine as also Minkler and Missouri Pippin. Aiken showed up in all its glory and some have been set apart to figure in a legislative banquet. Duchess was quite a money maker. I know Wealthy is popular but it don't behave well here. It won't color soon enough, drops badly and frequently is disfigured at the stem end. We have Jeffries under the name of Gravenstein. It is a most excellent apple. Dr. Matthews is very promising and fine flavored but a little short on color. Kinnard bears lots, but scabs or does something worse. Don't plant Kinnard. I could mention many more varieties but I will stop here. The grand old varieties are grand still.

The apples have sold for over $500. At this writing, Nov. 7th they are not all sold. One-half the proceeds have been appropriated to pay for spray material, barrels, boxes, baskets and handling the apples. As there are so many varieties and only one or two trees of a variety, the marketing is quite difficult. Many times there are a half dozen varieties in one bushel or a dozen in a barrel. Apples were so plentiful in our locality this season that it was difficult to sell these scrappy collections for much price. The crabs won't sell in our market at all and when I shipped them they little more than paid the freight. Without naming them I condemn the whole family except the Kentucky Cider. It is a grand apple. We have one freak in the person of a Rambo. We discovered when trimming it was not a Rambo. The apple is green on the outside and green inside. Its quality and flavor is like the Rambo. On close inspection both the tree and fruit show traces of the Rambo. Its partner is a Rambo straight.

Prof. Troop—In addition to the report given, we found last spring that it would be necessary to have a power sprayer. The committee au-

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thorized Mr. Burton to go ahead and get it, which he did and it was afterward found that the Burton Fruit Company needed it and they simply took it and paid for it so the society was out nothing for the sprayer.

Report accepted.

REPORT OF THE TREASURER, S. A. HAZELETT.

To the Honorable President and Members of the Indiana Horticultural Society: I submit the following report of receipts and disbursements for the year Sept. 30th, 1909, to Oct. 1st, 1910, inclusive.

Oct, 1, 1909, balance on hand	$390 50
Oct. 1, 1909, received from Secretary Flick	53 50
Dec. 10, 1909, received from Secretary Flick	61 00
Jan. 12, 1910, received from Secretary Woodbury	31 00
July, 1910, received from Secretary Woodbury	129 95
Oct. 12, 1910, received from Secretary Woodbury	5 30
Received from State appropriation	599 94
Total receipts	$1,271 19
Total disbursements	624 94
Balance on hand Oct. 1, 1910	$646 25

S. A. HAZELETT, Treasurer.

Disbursements.

	Voucher No.	
Oct. 1st, 1909—		
W. B. Flick	64	$80 55
Dec. 2—		
Mrs. Ella Green	65	45 00
A. Garretson	66	3 15
S. A. Hazelett	67	119 40
Sentinel Ptg. Co.	68	19 65
W. B. Flick	69	55 02
E. Y. Teas	70	3 25
J. Snodgrass	71	3 65
H. H. Swaim	72	10 55
J. J. Milhous	74	1 75
H. M. Stout	75	6 25
J. Troop	76	5 50
W. C. Reed	77	7 68
C. N. Lindley	78	12 60
A. H. Bogue	79	7 60

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Jan. 12, 1910—	Voucher No.	
C. G. Woodbury	151	23 10
C. G. Woodbury	152	37 75
J. C. Grossman	153	2 85
Mrs. Ella Green	154	35 00
S. A. Hazelett	155	14 20
H. H. Swaim	156	5 30
E. Y. Teas	157	4 95
C. N. Lindley	158	9 35
C. G. Woodbury	161	25 00
C. G. Woodbury	162	83 84
Total disbursements		$624 94

Report accepted.

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REPORT OF SECRETARY, C. G. WOODBURY:

INDIANA HORTICULTURAL SOCIETY IN ACCOUNT WITH STATE.

OCT. 1, 1909–SEPT. 31, 1910.

Allowed at meeting of Executive Board at Indianapolis Dec. 2, 1909.

Voucher No.	To Whom Issued.	Service Rendered or Article Purchased.	Amount.
54	W. B. Flick	Oct 1, 1909, part salary as secretary, 1908-09	$80 55
66	Mrs. Ella Shera Green	Dec. 2, 1909, reporting summer meeting and transcribing manuscript	45 00
66	Amos Garretson	Car fare, $1.15; meals, $1.00; bed, $1.00	3 15
67	Samuel A. Hazelett	Premiums paid to exhibitors at Fruit Show in connection with 49th annual meeting, Indianapolis, Dec. 1 and 2, 1909	119 40
68	Sentinel Printing Co.	Oct. 30, 1M 6¾ in. envelopes, $2.50; Nov. 1, 1M letter heads, $3.50; Nov. 8, 1M 6 pg. folders, $9.60; Nov. 11, 150 typewritten letters, $2.00; Nov. 13, 150 newspaper clippings, $2.05	19 65
69	W. B. Flick	Sept. 24, to expressage, $0.90; Nov. 10, to expressage, $0.25; July, Aug., and Sept., $1.20; Aug. 16, postage, $2.00; Sept. 17, postage, $20.00; Sept. 24, postage, $5.00; Nov. 15, postage, $8.00; Nov. 26, postage, $1.00; Dec. 1, salary for Oct., Nov., 1909, $16.67	55 02
70	E. Y. Teas	Car fare, Centerville-Indianapolis and return, $2.00; Expenses in city, $1.25	3 25
71	J. M. Snodgrass	Car fare as member of Horticultural Com., $1.90; Hotel bill, $1.75	3 65
72	H. H. Swaim	Mileage, $6.30; lodging and meals, $1.75; Supt. of Exhibits, $2.50	10 55
74	J. J. Milhous	Dec. 2, railway fare and board	1 75
75	H. M. Stout	Car fare, $1.00; lodging, $1.00; board, $1.75; services as judge, $2.50	6 25
76	Prof. J. Troop	Dec. 2, traveling expenses at annual meeting Board of Horticulture	5 50
77	W. C. Reed	Dec. 2, expenses, annual meeting	7 68
78	C. N. Lindley	Dec. 2, expenses, member of Board attending annual meeting	12 60
79	A. H. Bogue	Expenses as member of Hort. Com. attending annual meeting	9 60
		Allowed at Meeting of Executive Board at Lafayette, January 12, 1910.	
151	C. G. Woodbury	Dec. 13, 1909, fare to Indianapolis and return to receive secretary's books from W. B. Flick, $2.00; Dec. 17, interurban freight 5 boxes Hort. Soc. reports Indianapolis to Lafayette, $1.10; Dec. 18, interurban freight returning boxes to State House, $0.25; Dec. 17, drayage and packing on books at Indianapolis, $2.75; Dec. 20, postage stamps, $2.00; Dec. 26, postage stamps, $15.00	23 10
152	C. G. Woodbury	Dec. 31, Celia E. Kenzler, stenographic work, 87 hours at 20 cents, $17.40; Jan. 6, Burt-Haywood, stationery, $14.00; Jan. 10 rubber stamp, $1.35; Jan. 10, Celia E. Kenzler stenographic work, 25 hours at 20 cents, $5.00	37 75
153	J. C. Grossman	Jan. 12, railroad, interurban and street car fare, Clark Creek to Lafayette and return, $2.65; to lunch, $0.20	2 85
154	Ella Shera Green	To reporting 4 sessions annual meeting at $2.50, $10.00; to transcribing 100 pp. manuscript at 25 cents, $25.00	35 00
155	Samuel A. Hazelett	Dec. 2, paid H. M. Weed, lecturer, $10.00; Jan. 12, expenses, Board meeting, Lafayette, railroad, $2.20; Jan. 12, meals, $0.50; Jan. 12, stamps, $1.50	14 20
156	H. H. Swaim	Jan. 12, railroad and interurban fare, South Bend-Lafayette and return, $4.20; street car fare, $0.10; lodging, $0.50; meals, $0.50	5 30
157	E. Y. Teas	Interurban fare, Centerville to Lafayette and return, $4.75; street car fare, $0.20	4 95
158	C. N. Lindley	Jan. 12, railroad fare, Salem to Lafayette and return, $6.50; street car fare, $0.20; dinner, $0.30; supper, $0.15; breakfast, $0.40; supper, $0.30; breakfast, $0.40; dinner, $0.50; lodging, $1.00 (allowed)	9 35

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REPORT OF SECRETARY—Continued.

Voucher No.	To Whom Issued.	Service Rendered or Article Purchased.	Amount.
		Approved by Board Members Individually, Approving Bills Sent to Them Without Having Meeting.	
162	C. G. Woodbury.....	Jan. 10, freight and express on apples for Society exhibit at Farmers' Short Course at Purdue, $4.49; Jan. 17, index cards, $0.20; Jan. 19, Lafayette to Indianapolis and return to meet Printing Board, $2.50; Jan. 19, two receipt books, $1.00; Jan. 20, 1 card index alphabet, $0.20; Jan. 31, stenographic assistance to Feb. 1, $6.50; Mar. 19, assistance in indexing 49th report, $4.80; April 26, postage, $6.00; May 11, 500 clasp envelopes for mailing reports, $4.75; May 16, postage, $20.00; May 31, stenographic help to June 1st, $8.40; June 1, salary for Mar., April and May, $25.00.....	83 84
		Total expenses from Oct. 1, 1909, to Sept. 30, 1910.....	$599 94
		Amount reverting to State treasury, Sept. 30, 1910.....	06
			$600 00
		Amount received from State treasurer, Sept. 30, 1909, to Oct. 1, 1910.....	$600 00

INDIANA HORTICULTURAL SOCIETY IN ACCOUNT WITH SECRETARY.

OCT. 1, 1909–SEPT. 30, 1910.

CREDIT.

Date.	From Whom Received.	For What Received.	Amount.
Sept. 30, 1909	.....	Balance in treasury.....	$390 50
		Nov. 1, 1905..... $149 00	
		Oct. 31, 1906..... 88 00	
		Dec. 6, 1907..... 66 00	
		Dec. 2, 1908..... 87 50	
		$390 50	
Oct. 1, 1909	W. B. Flick.....	Fees and dues to Sept. 30, 1909.....	53 50
Dec. 10, 1909	W. B. Flick.....	Fees and dues to date.....	61 00
Jan. 13, 1910	C. G. Woodbury.....	Membership fees to date.....	31 00
Jan. 17, 1910	Joe A. Burton.....	Proceeds (gross) Experimental Orchard.....	462 90
July 13, 1910	C. G. Woodbury.....	Membership fees and extra postage.....	71 20
Sept. 30, 1910	C. G. Woodbury.....	Membership fees to Sept. 30, 1910.....	5 30
			$1,075 40

DEBIT.

Voucher No. or Date.	To Whom Issued.	Service Rendered or Article Purchased.	Amount.
161	C. G. Woodbury.....	Salary as Sec. for Dec., Jan. and Feb., 1909–1910..	$25 00
Jan. 17	Joe A. Burton by Sec..	Two quarters' salary as Supt. Exp. Orchard, July to Dec., 1909, inclusive.....	250 00
Jan. 17	Joe A. Burton by Sec..	Expenses in caring for Exp. Orchard, 1909.....	154 15
		Balance in treasury Sept. 30, 1910.....	$646 25

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REPORTS OF COMMITTEES.

The Vice-President was called to the chair and the report of the committee on the President's address was read by Mr. D. B. Johnson:

We, the Committee on President's Address, most heartily endorse the recommendations set forth in his address, and further, we recommend that the legislative committee of the society be instructed to make a special effort to obtain from the next legislature a special appropriation to the society to enable it to maintain the experimental orchard at Mitchell.

D. B. JOHNSON,
H. M. STOUT,
L. B. CUSTER,
Committee.

Report accepted.

REPORT OF COMMITTEE ON RESOLUTIONS—MR. F. J. HEACOCK.

Resolved, That we extend our thanks to Mr. T. A. Farrand, Prof. J. W. Roberts, Dr. H. E. Barnard and all who have contributed to the success of our semi-centennial meeting.

Resolved, That we favor an extension of our pure food laws under proper control to cover the marketing of diseased and insect infested fruits.

Resolved, That we express our appreciation of the work of the Department of Horticulture and of our Experiment Station in their investigations and in the dissemination of knowledge relative to the control of injurious insects and plant diseases.

Resolved, That our president be instructed to appoint a committee of three members to act in conjunction with our legislative committee in presenting to the Legislature the importance of having a display of fruit from our orchards at the National Land Show in Chicago in the fall of 1911, and asking an appropriation for that purpose.

Resolved, That we note with satisfaction the marked increase in membership and in attendance at the annual meeting, and urge the members to work each in his locality to still further increase the membership and usefulness of the society.

Whereas, The fruit growers and farmers of Indiana appreciate the necessity for broad and liberal laws regulating the standards of weights and measures, and

Whereas, There are at present no suitable or efficient laws for that purpose, be it

Resolved, That the Indiana Horticultural Society expresses its belief

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that such legislation is necessary for the protection of the consumer and producer alike and earnestly urges its enactment.

F. J. HEACOCK,
J. G. KINGSBURY,
SID CONGER,
Committee.

Report of committee accepted.

REPORT OF OBITUARY COMMITTEE—C. M. HOBBS.

We regret to record the decease the past year of J. J. W. Billingsley, Herman Chamberlain, Charles Howland and Dr. Melville Wells.

These men were all active and useful members of this society. We feel keenly their loss and extend to their families our appreciation of their virtues and with them mourn our mutual loss.

E. Y. TEAS,
MRS. W. B. FLICK,
C. M. HOBBS,
Committee.

Report of committee accepted.

The Committee on Membership had no report to make.

The following report was made by the Auditing Committee:

We, your Committee appointed to audit the financial accounts of the Secretary and Treasurer beg to report that we find them correct.

BEN F. BILITER,
R. L. BECK,
CHRIS KING,
Committee.

Report accepted.

REPORT OF COMMITTEE ON AWARDS—MR. J. C. GROSSMAN.

Scalecide Trophy, for the best three-bushel boxes of apples of any three varieties grown in the State:

1. C. N. Lindley, Salem.
2. F. J. Heacock, Salem.
3. Omer R. Abraham, Martinsville.

Fruitman and Gardener Trophy for the best and most attractive bushel box of apples:

1. Frank Moffett, Carmel.
2. Omer R. Abraham, Martinsville.
3. C. N. Lindley, Salem.

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Six varieties for commercial orchard:

1. F. J. Heacock, Salem.
2. C. N. Lindley, Salem.
3. Frank Moffett, Carmel.

Ten varieties for home use:

1. Frank Moffett, Carmel.
2. C. N. Lindley, Salem.
3. F. J. Heacock, Salem.

Plate Baldwin:

1. I. M. Macklin, Bryant.
2. W. F. DeVilbiss, Fort Wayne.

Plate Ben Davis:

1. F. J. Heacock, Salem.
2. C. N. Lindley, Salem.

Plate English Russet:

1. Omer Abraham, Martinsville.

Plate Grimes:

1. F. J. Heacock, Salem.
2. I. M. Macklin, Bryant.

Plate Hubbardston:

1. Frank Moffett, Carmel.

Plate Indiana Favorite:

1. Frank Moffett, Carmel.
2. Evan Swift, Franklin.

Plate Rawles:

1. C. N. Lindley, Salem.
2. F. J. Heacock, Salem.

Plate Jonathan:

1. Frank Moffett, Carmel.
2. W. B. Flick, Lawrence.

Plate Maiden Blush:

1. Omer Abraham, Martinsville.
2. I. M. Macklin, Bryant.

Plate Mann:

1. W. H. Newhouse, Lawrence.
2. W. F. DeVilbiss, Fort Wayne.

Plate Moore Sweet:

1. F. J. Heacock.
2. Frank Moffett.

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Plate Northern Spy:

1. I. M. Macklin.
2. C. N. Lindley.

Plate Rhode Island Greening:

1. Frank Moffett.

Plate Pewaukee:

1. W. B. Flick.
2. Chris King, Rushville.

Plate Rambo:

1. Omer R. Abraham.

Plate Roman Stem:

1. C. N. Lindley.
2. Jno. M. Beaver, Glenwood.

Plate Rome Beauty:

1. F. J. Heacock.
2. Chris King.

Plate Salome:

1. I. M. Macklin.

Plate Smith Cider:

1. W. F. DeVilbiss.

Plate Starke:

1. F. J. Heacock.
2. C. N. Lindley.

Plate Stayman Winesap:

1. Frank Moffett.

Plate Twenty Ounce:

1. C. N. Lindley.

Plate Wealthy:

1. Omer R. Abraham.
2. C. N. Lindley.

Plate White Pippin:

1. C. N. Lindley.
2. F. J. Heacock.

Plate Willow Twig:

1. F. J. Heacock.
2. W. B. Flick.

Plate Winesap:

1 C. N. Lindley.
2 F. J. Heacock.

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Plate Wolf River:

1. Omer R. Abraham.

Plate York Imperial:

1. Frank Moffett.
2. W. F. DeVilbiss.

Plate Yellow Bellflower:

1. C. N. Lindley.
2. Omer R. Abraham.

Plate Vandevere:

1. Omer R. Abraham.
2. John M. Beaver.

CLASS II. *Pears.*

Plate Garber:

1. Milton Stempler, Indianapolis

Plate Kieffer:

1. W. F. DeVilbiss, Fort Wayne.

CLASS III. *Miscellaneous Fruits*

Plate Missouri Quince:

1. Omer R. Abraham.

Plate Orange Quince:

1. Omer R. Abraham.

Collection of Nuts grown in the State in 1910:

1. Edw. A. Eickhoff, Wanamaker.
2. Arthur E. Woods, Clayton.

CLASS IV. *Vegetables.*

Plate Early Ohio Potatoes:

1. Omer R. Abraham.

Plate Green Mountain Potatoes:

1. Omer R. Abraham.

Plate Irish Cobbler Potatoes:

1. Omer R. Abraham.

Plate Rural New Yorker Potatoes:

1. Omer R. Abraham.

Collection of potatoes (not less than 10 varieties):

1. Omer R. Abraham.

Report accepted.

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The Chair appointed Mr. H. M. Stout on the legislative committee to succeed Mr. L. B. Custer, whose term had expired. The committee now stands, C. M. Hobbs, Mason J. Niblack and H. M. Stout.

ELECTION OF OFFICERS.

Messrs. Beaver, Eastman, Wellington and Wallace were appointed as tellers.

President: Mr. C. N. Lindley was nominated and elected by acclamation.

Vice-President: Mr. J. C. Grossman was nominated and elected by acclamation.

Secretary: Prof. C. G. Woodbury and Mr. J. J. Milhous were nominated. Prof. Woodbury received 33 votes and Mr. Milhous 28.

Prof. Woodbury was declared elected.

Treasurer: Mr. S. A. Hazelett was nominated and elected by acclamation.

Member of Executive Board: Prof. J. Troop and Mr. W. B. Flick were nominated. Mr. Flick received 46 votes and Prof. Troop 17. Mr. Flick was declared elected for a term of three years.

District Vice-Presidents:

First District, W. J. Ritterskamp, Princeton.
Second District, R. E. Simpson, Vincennes.
Third District, F. J. Heacock, Salem.
Fourth District, H. M. Stout, Trafalgar.
Fifth District, J. M. Carver, Greencastle.
Sixth District, James N. Goble, Greenfield.
Seventh District, J. J. Milhous, Valley Mills.
Eighth District, Arthur Shoemaker, Daleville.
Ninth District, J. M. Snodgrass, Kirklin.
Tenth District, W. M. Walton, Jr., LaPorte.
Eleventh District, J. A. Stineman, McGrawsville.
Twelfth District, W. F. DeVilbiss, Ft. Wayne.
Thirteenth District, George Matthews, South Bend.

The Secretary was authorized to cast the ballot and all were elected by acclamation.

HEART TO HEART TALKS.

Professor Woodbury—I would like to ask the Society, on behalf of the Executive Board, to express some opinion and to make some ruling for the guidance of the Board, in regard to the management of the Society's financial affairs for another year. There is just barely enough money at the

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present time to run the Society till the next annual meeting, on the present basis of expenditure. By that time, we will have entirely exhausted our funds. The Executive Board asks for some definite recommendations from the Society for its guidance.

I presented some facts and figures to the Board at a recent meeting. They asked me to prepare a financial statement covering the situation and send it to each member of the Society. I prepared such a statement as well as I could and sent a copy to each member with the program, so that each one might come prepared to discuss the situation.

(The Secretary then gave a résumé of the statement, a reprint of which is included herewith.)

"Dear Fellow-Member of the Indiana Horticultural Society: One of the important things to be decided upon at the forthcoming meeting of the Society, to be held at Indianapolis on December 7 and 8, is the future financial policy of our organization. Your Secretary brought certain facts to the attention of your Executive Board at a recent meeting and asked the Board to have some recommendations to make to the Society at the next meeting in order to avert a financial crisis in our affairs. The Board felt that the situation should be thoroughly understood by every member of the Society before the meeting and, to this end, directed your Secretary to prepare a financial statement and to present briefly the various considerations which are involved so that each and every one might be prepared to discuss the matter with understanding. The following is an attempt to carry out these instructions:

THE PROBLEM AT THE BEGINNING OF THE PAST FISCAL YEAR AND WHAT HAS BEEN DONE TO MEET IT.

For several years previous to the winter of 1907-'08, the Society had enjoyed an appropriation from the State of $2,600.00 per year. Before this the appropriation had been $1,500 per year for some time. The last legislature reduced this annual appropriation from $2,600.00 to $600.00 per year. Thus the greater part of the Society's income was cut off and with the beginning of the administration of the present officers, the Society was forced to cut down expenses in every direction and, if possible, to do so without interfering with the effectiveness of the Society's work. The salary of the Secretary was reduced from $900 per year to $100 and the usual summer meeting of the Society was omitted. This meeting ordinarily costs, in traveling expenses, compensation to speakers and in premiums, about $200. Thus a saving of $1,000 was effected in these two items alone. Economy has been practiced in other directions also. Fewer Board meetings have been held, no unnecessary printing has been done

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and the Secretary's office has been administered with no more cash outlay than was absolutely necessary to carry on the business of the Society effectively.

Along with the decrease in expenditures, an earnest and successful effort has been made to increase the income of the Society through collection of membership dues and addition of new members. It was found that the names of quite a large number were being carried as members whose dues were several years in arrears. A large amount of effort was put into collection of these dues and finally all nonpaying individuals were dropped from the lists. The result of this effort has been, first, that the membership has been put on a definite, rock-bottom basis, and second, that the receipts from dues have been greater for the fiscal year closing Sept. 30, 1910, by over 300 per cent. than they were for the year closing Sept. 30, 1909, and by over double the amount received in any of the past five years.

THE PRESENT SITUATION.

During the past year with such management of the Society's business as has been outlined above, the Society completes the first half century of its organized existence.

In beginning this fifty-first year, it is necessary still further to reduce the expenses of the organization and the problem is how this can best be done. For several years, the Society has maintained an experimental orchard at Mitchell, where, under the wise and skillful management of Mr. Joe A. Burton, a fine variety orchard has been put out where about 100 varieties of apples are being tested and compared and where apple breeding experiments have been started which promise to be of great value to the orchardists of the State. The title of this land is with the State but the Society is responsible for its administration. Mr. Burton has acted as superintendent of the orchard and has received, for his services, $500 per year, exclusive of the cost of orchard management in the way of labor, picking, packing and handling fruit, etc. One of the most puzzling problems before us now is how to continue to conduct this orchard at the present cost with the present income of the Society. The following is a rough statement of the present assets and liabilities of the Society figured on the present basis of expenditure to the close of the current fiscal year, Sept. 30, 1911. The superintendent of the orchard is paid by the calendar year, his present term expiring Dec. 31, 1910.

Assets to Sept. 30, 1911—

Balance in State fund, Nov. 15, 1910	$439 55
Balance in Society fund	646 25

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Proceeds from experimental orchard for 1910—about	$460 00
Membership fees to Sept. 30, 1911, estimated at	150 00
Total assets	$1,695 75

Liabilities to Sept. 30, 1911—

Due to Joe A. Burton, to Dec. 31, 1910	$500 00
Salary, Joe A. Burton, Jan. 1 to Sept. 30, 1911	375 00
Due Joe A. Burton, expenses of orchard management, 1910	210 00
Salary of secretary to Sept. 30, 1911	75 00
Office expenses, postage, stationery to Sept. 30, 1911, estimated at	125 00
Expenses for winter meeting speakers, premiums, etc., estimated at	250 00
Expenses for summer meeting, Aug., 1911, estimated at	200 00
Total liabilities	$1,735 00
	$1,695 75
Estimated impending deficit	$40 25

WHAT ARE WE GOING TO DO ABOUT IT?

It will be seen at a glance at the above figures that the administration of the orchard is the largest item in the Society's budget. The present situation has been foreseen from the time the appropriation was reduced, but no action has been taken. At one time the proposition was entertained of turning over the administration of the orchard to the Purdue University Experiment Station. The arguments advanced against this move may be summarized as follows:

The orchard is just on the point of being of great educational value and the Society should hold it and develop it. All the responsibility for setting and growing the trees has been borne by the Society and it ought to receive the credit for the fruition of its plans.

The orchard, though now costly, will soon be, or now is, self-supporting and will not continue to be a drain on the treasury of the Society.

The arguments which have been advanced for this move may be summarized as follows:

In order for the orchard to be of the greatest value to the Society and to the State, complete scientific data should be taken and careful records should be made of the yield, behavior, keeping quality, etc., of all the varieties in the orchard. This is expensive and time-consuming work, demanding expert training, and the Station is better equipped to do it than the Society can ever hope to be.

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Under Station administration, continuity of policy would be assured and the interests of the orchard itself would be better safeguarded than under Society management if the time should come when Mr. Burton would not care to or could not longer act as superintendent.

Without the heavy expense of the Experimental Orchard, the Society funds would be left free to be used in pushing the work more effectively in other directions. Indiana could be represented in the National Apple Shows, bigger and better meetings could be held, the best outside talent in the country could be secured to address these meetings and in many other ways the Society might profit by turning its funds to other accounts.

As to the matter of expense, it has been pointed out that this year the orchard has borne a big crop, and prices have been high, and yet the orchard has been maintained at a net loss of about $250.00; that it can never be self-supporting under the present arrangement until it produces an annual net gain of at least $500.00 (the superintendent's salary), and that it can never produce this net profit if it is used as it should be for educational rather than commercial purposes.

The Board feels that some decision should be reached in regard to this matter at this meeting. The foregoing arguments, pro and con, are simply presented for what they are worth. Doubtless other suggestions and alternatives will occur to each member. It is the desire of the Board simply to get the facts of the situation clearly presented, so that at the meeting, some business policy may be decided upon which will be for the best interests of the whole Society.

Of course, expense could be saved by omitting the summer meeting next season. This meeting, however, is exceedingly valuable to the Society and should by all means be continued if possible.

It will be observed that the Society might very nearly run for one more year on the present basis, but then it would have entirely exhausted its accumulated sinking fund and would have only its current state appropriation and its receipts from membership fees to go on. The present management of expending $500.00 per year for the superintendent of the experimental orchard and $100.00 per year for the secretary's salary makes a fixed expense equal to the entire amount received from the State. This leaves only the membership fees and the problematical proceeds from the experimental orchard to hold meetings, pay premiums and provide for running expenses. The amount is totally inadequate for these purposes and, in the event of a single crop failure, which would create a deficit for the experimental orchard, the Society could not meet its expenses.

Please come prepared to remain at the business meeting and take part in the discussion.

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Your secretary feels encouraged over the horticultural situation as a whole. Much good has been accomplished during the past year. We now have a definite, coherent, interested, paying membership and a thorough understanding of the situation. We have certain problems to confront and solve. We will confront them and we will solve them and go forward for another fifty years, a bigger, better organization with more power, greater efficiency and an ever-increasing success in bringing our ideals nearer to realization. C. G. WOODBURY, Secretary."

Here, then, is the situation at the present time. What is the pleasure of the Society? As has been said already, the Board feels that it is "up against it" and wants your advice.

Mr. Hobbs—In regard to the experimental orchard, it is my firm conviction that this orchard should be turned over to the Experiment Station, where they have men and money to do things. There is where it practically belongs. We established this when we were getting more money than we get now. I think it is doubtful if we can get any more appropriation from the legislature. They always ask, "How is it you exceed the Live Stock Association, Dairy and others receiving only $500.00 per year?" We have explained and I believe with the present appropriation we could get along nicely if we eliminate the orchard. Mr. Burton cannot much longer manage the orchard. He is getting old and wants to relinquish the work. It has now reached a state where it has to be very carefully looked after, and I am thoroughly of the opinion that the best thing we can do, as a Society, is to turn this matter over to the Experiment Station where it properly belongs. When the land was bought, the State paid $20.00 per acre and the deed was made to the State and it was allotted to us for experimental purposes. We have the opinion from the Attorney General that the transfer can be legally made.

Prof. Woodbury—I have taken this matter up with the Director of the Experiment Station and the President of the University and have talked it over a good deal. The Station does not *want* the experimental orchard. If it is the express wish of a majority of the Society, the Station might accept the management of the orchard, but this is a matter which would have to come before the Board of Trustees, and I do not know what their decision would be. It should be thoroughly understood that the Station has no interest in getting the experimental orchard. I personally would rather see the Society manage it, if it can do so effectively.

Mr. Flick—This Society had some funds on hand several years ago before our Experiment Station was ready to work and they procured ground for carrying on certain experiments in fruit culture. The Society paid

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out its own money for the land. They have had the management ever since and the expense, and it seems to me that it is not wise for the Society to relinquish its hold on that piece of ground at this time. It is true that we are running behind, but it seems to me that there should be arrangements made by which the Society could manage it and receive the income each year. It certainly will be growing, and in a few years it will be a source of revenue. I know how the Experiment Station feels about it, and, it has been thought that the Society could not transfer their rights to any other association. If the Attorney General has so interpreted it, that makes it different. I think it should be retained until some future developments will show what can be done.

Prof. Woodbury—Our appropriation used to be $2,600.00 but now it has dropped down to $600.00. Under the present arrangements we are spending more than our income and I don't like that way of doing business. If the Society can afford to keep the orchard, it will be of value, but if the Society manages it for many years, it will have to be managed at less expense or we will be out of money.

Professor Troop—There is another thing to be taken into account. I do not think the Society established this orchard as a money-making venture. It was for educational purposes. It has been growing all this time and is now getting nicely into bearing. I think we ought to look now at the educational value to be gotten out of it. There are many notes to be taken on those varieties every year. This year nearly all were bearing and we have no detailed record of the comparative behavior of the different varieties. There is not time nor means to get that data under the present arrangement. The orchard was put out for educational purposes and in order to make it of the greatest value along that line, these notes should be taken and published so that the people of the State will know just what is going on. As far as the Experiment Station is concerned, we do not care about handling it as we have work enough without that, but some proposition ought to be made for getting all out of it that is possible from an educational standpoint.

Mr. Henby—It seems to me that Purdue, with her equipment for taking notes on the different varieties and sending out the bulletins to persons who are interested and distributing them among those men who are interested, is something that is very important. As far as I am concerned, I think Purdue is better equipped to carry it on than we are.

Mr. Teas—I think the idea of establishing this orchard was very good. Mr. Burton is an old man and has all he can do besides this. I do not think it is possible for this Society to find help to carry on this orchard as

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it should be, even if we had the money, as we cannot get men, and if the Experiment Station will take it, it seems to me it is in their line and not ours and should be turned over to them.

Mr. E. J. Howland—I became a member of this Society almost at its inception. I believe I lacked about ninety days of being the first member. I have seen this Society in worse financial straits than it is now. I believe an appeal to the legislature will bring forth an appropriation. I would be sorry to see this land transferred to the University. I have all respect for the University, but the orchard is now in good hands and I think in a few years it will become a source of revenue and an ornament to the State if continued under the present management. I don't want to put anything in the way of this Society but I have seen worse financial conditions and I believe that the state legislature will provide ample funds, and I move that this matter be deferred another year. (Seconded.)

Mr. Hobbs—I would like to say further, that the Board that has had this orchard in charge the past years feel that they are up against it, both in regard to the expense of running the orchard and of securing someone to superintend the work. I think it very doubtful whether Mr. Burton would accept the superintendency of the orchard another year. If he does not, I don't know where the Board could get anyone. There is no one in the State who could do it. The orchard can never be made a paying proposition, for the reason that we do not have the commercial varieties. Many were there only to be tested, and for that reason it can never be a paying proposition in a large measure. It is an experimental orchard for testing the varieties, and many are worthless. I was very favorable to the orchard and I am much interested in the outcome. It is for that reason that I would like to see it put under proper management so that the State will get the best results from it.

Mr. Shoemaker—It seems to me that deferring this another year is simply shifting the responsibility and as we are now up against it, it seems to me, we ought to take some action now. In harmony with what has been said, I feel that Purdue University could take hold of this orchard better than this Society can. If the purpose of the orchard was to obtain a revenue, perhaps it would be better to keep it, but that was not the object of the orchard. The number of varieties preclude the idea of a revenue and as the State would have to appropriate the money and as it appropriates money to the Experiment Station, it seems to me that it would only be carrying out the purposes of the State for Purdue to take care of it. It resolves itself into this, Is Purdue University better prepared to take charge of this orchard than the Society? If so, why not do it?

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Mr. Kingsbury—I want to amend the motion of Mr. Howland in this way, that we refer this question to the executive committee with instructions to continue the orchard under the present management if found practicable and advantageous to the interest of the Society and report at the next meeting. It seems to me that we can attend to this now as well as any time and it would be unwise to postpone it another year. (Amendment seconded.)

Mr. Walton—I believe we ought to discuss this matter a while first. I would like to know how the Society is going to make it pay if we keep it.

Professor Woodbury—The executive board has asked for advice and instructions. Deferring action for another year is simply putting all the responsibility right back on the board where it has been, with no instructions as to how to proceed.

Mr. Stout—I want to say that it will take no more money for the Society to carry on the orchard than for Purdue. Nothing that comes from Purdue comes very cheap. If. Mr. Burton can do it for $500, why give a man $2,000 to do it no better? I don't feel like separating from that thing on such short notice. Let us see if we can't get from the next legislature money to carry on this orchard.

Mr. Douglass—Several members of the Society not here today have expressed themselves on this line. They are in favor of retaining this orchard. The Horticultural Society has spent a good deal of money and put in a good deal of time and work to keep this thing up. The feeling is that the Society would reap the benefit of the experiments already started. The impression seems to be that Purdue does not want this orchard, at least not very bad, and if that is the case, I don't see any reason for discussion. Purdue does not want the orchard and there are a number of people here and some absent ones who want the Society to keep the orchard. This orchard will be managed by state funds and the question is whether the Society or Purdue will get the increased appropriation to manage it. Also whether the Society can manage it cheaper than Purdue. As to the superintendent of the orchard, I don't see why the Society is paying $500 for a superintendent and paying extra for all the work of spraying, pruning, etc. What does that $500 go for? The officers say there has been no data gathered. How much does it cost to gather data from an orchard? I would simply like to say that as far as the superintendent of the orchard is concerned, the Department of Entomology will do all the work that has been done for $500 a year and not charge the Society a cent for it.

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Professor Woodbury—Mr. Douglass asks what Mr. Burton has to show for his $500.00. My opinion is that Uncle Joe is worth that much just for his individual judgment as to whether one variety is better than another variety. It takes a man pretty well acquainted with apples to do it and Mr. Burton is probably better acquainted with apples than anyone in the State. There is where the State gets the value of the man. If the Society wishes to get a cheaper man, or if it would rather have the judgment of the State Entomologist than Uncle Joe Burton's judgment, that is another matter for the Society to consider.

The question was put to vote and the amendment proposed by Mr. Kingsbury was lost.

Mr. Johnson—The legislature meets this year and will not meet for two years more. If this is put off we will have no money and we ought to decide this today. We ought to think about this thing as we will be left without any money.

Professor Troop—I move that this question be referred to the executive committee until the first of April, or until the close of the legislature, and then if no appropriation is made, the committee can dispose of it as it sees fit. (Carried.)

Mr. Teas—The matter has already been left to the Board. Why not settle it now?

Mr. Shoemaker—It seems to me that it would be well to give the legislative committee instructions as to the will of this Society in case they do not get an appropriation.

Mr. Kingsbury—I move that the committee be instructed to continue the orchard under the present management if possible. (Carried.)

Professor Woodbury—I would like to know what the will of the Society is in case we do not get the increased appropriation from the legislature.

Mr. Howland—I think that will be a very strong inducement to make an appropriation. If it is given to Purdue, they will help to support it anyhow and I don't think it will make any difference which Society keeps it.

Mr. Jones—I move that if we do not get an appropriation, the Executive Board be instructed to tender the management of the orchard to the Purdue Experiment Station. (Carried.)

Mr. Hobbs—There has been something said about the presence of the two living charter members of this association and we are all glad they

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are here and it is fitting to show that we appreciate their presence with us.

The two gentlemen, E. Y. Teas, of Centerville, and Mr. Abram Trueblood of Anderson, were asked to stand up; also Mr. Howland, who has been a member for fifty years.

Adjourned.

HISTORY OF INDIANA EXPERIMENTAL ORCHARD.

By Joe A. Burton, Superintendent.

The primary purpose of this orchard was to produce new and better varieties of apples. After its inauguration, additional work was taken on. The idea of such an undertaking was presented to the Society in 1896 by Joe A. Burton in a paper entitled, "The Coming Apple." Up to this time no organization had ever undertaken this work. In fact, nearly all of our varities were chance selections of chance varieties. The grandest of all apples, the Grimes, stood unrecognized for over sixty years. Peter M. Gideon had been planting apple seeds for some years trying to secure something hardy enough for the Northwest. He was working for hardiness rather than quality. In the paper referred to, it was pointed out that all the good qualities of apples might be combined in one. Professor H. E. VanDeman was present and vigorously urged the Society to undertake the work. Professor Green of the Ohio Station, having seen the topic announced in our program, came in great enthusiasm to learn about the "coming apple." Said Ohio was greatly in need of a more suitable apple. He was greatly disappointed when he found out we did not have a wonderful new apple, but were only pointing out how it might be produced. The matter was much talked over and different propositions presented. An attempt was made to have Purdue undertake the matter, but this failed. In 1898, a committee consisting of Joe A. Burton, C. M. Hobbs, L. B. Custer and W. W. Stevens was appointed to take this matter up, select a site and if found practical, to proceed with the work. Dr. Gardner of Bedford offered a free location of 40 acres near Huron in Lawrence county. This was certainly cheap enough. The next consideration was how to manage it. It was estimated that a common worker could be obtained for $400 per year. He would need a house, barn, team and tools. Then he would need to be looked after by an expert. This would involve more expense than the Society could bear. I stated that if it was near me I would care for it for $400 a year. After that the committee would consider no site that was not near me. Early in 1899, the present location of 20 acres was offered us at $30 per acre. The Legislature was in session at that time

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and graciously cut off all our appropriation. However, the Society had enough surplus to pay for the land but none to operate with. The land was bought and myself placed in charge, with Professor Troop, C. M. Hobbs and D. F. Maish as a committee to give directions. I immediately went to work, removed about 400 stumps and under direction of the committee set a variety plot, two trees each of 141 varieties, and about 200 trees to use for top-working. The varieties have since been increased to 159. In 1900, I had secured and planted about 10,000 seeds, many of them grown by hand pollenization. I might mention that about 100 were Wild Crab seed pollenized by Rome Beauty, none of which grew. We got a fairly good stand from the seeds planted. The business was new to me and to the committee. We had to feel our way. The seeds had been planted in nursery rows 4½ feet apart and 10 inches in the row. In 1901, these were transplanted into rows 9 feet wide and three to four feet in the rows. We were trying to be economical of space and made a great mistake. The trees have been so crowded that they could not show their true merit. In later plantings we have made the rows one rod apart and trees six feet in the row. After the first few years, we could not get among the trees to cultivate nor spray. To overcome, in a degree, the mistake in distances, we have cut out all trees as soon as we could object to them on account of the fruit. Doubtless we have destroyed some splendid varieties.

In 1901 we selected about 40 of the most promising seedlings and top-worked them to hurry their fruiting. Later we corresponded with Luther Burbank to learn if there was any reliable way to designate seedlings. He gave specific rules which coincided with what I already believed and with what others had told me. Strange is it not that every tree thus pointed has been a failure. Generally they have borne sweet apples It is a plain fact to me now that some of our best varieties have thorny or otherwise bad trees. Again, our crosses made by hand pollenization have been disappointing. We made a catalogue of desirable crosses. We might as well have figured on what would be the resultant cross of a woodchuck and a Plymouth Rock. We have, so far, only one decent offspring—Ben Davis on Genet. A pet theory was to inbreed varieties till we got a thoroughbred that would always come true. Then we could make positive crosses and know just what we would get. So far, we have nothing approaching a reproduction. Inbred Grimes produces horrible stuff. We had one theory left, sure and certain, as pointed out in my paper that led to the experimental work. That is, bud selection. It was pointed out that each selection would be a sure improvement on what went before and we could keep this up till we could develop just what we wanted slowly but surely. It turns out that God and not Darwin made the world and all things

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therein. When he has made a Ben Davis he has made a Ben Davis, and all the powers of earth and Hades can't change it. Since I come to think about it, I am glad it is so. Otherwise there would be no stability to our varieties. They would indeed shift about like Dr. Bailey's Early Crawfords. Working along this line has brought out facts hitherto unknown that are making a big sensation in tree growing just now. But more of this later on.

At the World's Fair at St. Louis we saved a lot of seeds from the show apples of several States. These were planted in 1905. Since that no seeds have been planted. The only practical way to improve the apple is to plant selected seeds and watch results. It is not probable that we could obtain a thoroughbred in 500 years' work. There is little prospect of gain by hand pollenization. Some varieties seem more apt to give good offspring than others, but none in our work has reproduced itself. One is a duplicate of the Hoop, but the parentage of this tree is unknown. Very little probability that it was a Hoop. There are several of the seedlings that are very promising. It is not the purpose of the management to introduce a new variety to the public merely because it is good, but it must surpass in some respects the good varieties we already have. One variety is promising enough that the Burton Fruit Company will try 200 of them in their commercial orchard. It is known in our work as No. 4. Its merits are wonderful, being productive, colors early (being red), size large and having superior cooking qualities. It sold on the Indianapolis markets last summer for $2.00 per bushel. Its defects are lack of quality in raw state and black streaks through the flesh when thoroughly ripe. The most promising seedlings will be catalogued and systematic tests commenced after the coming season.

So far as we know, we have carried on the only root-rot experiments to find a remedy. Prof. Von Schrenck of St. Louis tried to find a resistant stock. Our first work was with a dry mixture of lime-sulphur; the next, Bordeaux and then common salt. All these failed but the salt. The next was Pamunky phosphate or sand. It was a partial success; ashes did no good. Finally we discovered a remedy that is sure and very cheap but its application somewhat difficult. It is simply common air. Root-rot can no more live in the air than can a fish. Salt helped because the hogs ate it up and then the salty dirt over the roots, exposing them to the air. Pamunky helped because it let the air in. I had a lot of young trees affected with root-rot. I planted some in clay, some I filled the hole with sand and clay mixed, some with sand alone and some I planted in sand; all lived. The fact was that the rot had perished while exposed to the air. Some of our trees have lost their roots on one side, then blown over. The

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rot would then stop and the trees continue to produce their crops lying on their sides. I have never seen a tree with root-rot growing in sand—very few in light clay. We have not discovered a practical way to give air to the roots of a tree growing in heavy clay.

In 1909 we made an experiment to determine if the accumulation of bluestone and arsenic in the soil from spraying might injure the trees. Around a 7-year old tree, we applied 7 pounds of bluestone and 8 ounces of arsenic mixed in 25 gallons of water. This was sprinkled around the tree as far out as the limbs extended. This was enough medicine to spray the tree for thirty years. In practical spraying this material would be scattered over all the ground, much of it would be washed out or taken up by plants. All in all, there was as much poison around the tree as would accumulate by spraying in 100 years; the tree was not injured. The Colorado Experiment Station issued a bulletin warning the people that they were killing their trees by the accumulation of poison in the soil. I prepared an article citing the above fact for the Western Fruit Grower. Since that time we hear nothing about it.

We secured a bloomless apple from North Carolina. It went through the ceremony of blooming last season. It differs from others in that it has no petals. All other parts are present.

Many persons have sent in scions to have a much admired variety tested. Some have proved good, some bad. A peculiar incident happened in this line. Scions from two parties were grafted onto the same tree. Both proved to be Winesaps.

The results of our work in testing the variations of varieties is attracting national notoriety just now. An article explaining the work and results was published in the February number of "American Fruits;" also in the "Farmer's Review," of February 11. One is now pending in the "Northwest Horticulturist." In Washington, a corporation with $100,000 capital has been formed to exploit pedigreed fruit trees. My article to the "Northwest Horticulturist" was turned over to the manager of this company. No doubt but he is a perfect gentleman but was misled to believe in such an undertaking. If the work in testing the varietal variations can save the nurserymen much expense and the orchardist a big sum in the cost of his trees, it will surely not be in vain. I here insert the article from the "Farmer's Review."

PEDIGREED APPLE TREES.

On my recent return from the West I found in my accumulated mail a number of inquiries on the above topic. Various nurserymen, some from good motives, perhaps, and others to draw trade, are exploiting what they

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think, or claim to be, a superior strain of trees because of a fancied "pedigree." So far as I know I am the only person that has ever undertaken to find the truth or falsity of the above claim. This I have done in my connection with the Indiana Experimental Orchard. We know that corn, or any of the grains, vegetables or animals may be improved, or degenerated by careful selection or crossing. In fact, there is no known limit to the changes that may be made. We may by a careful system of selection and breeding develop a race horse into a draft horse. From the greyhound that has but little sense of smell, we might develop a successful bloodhound. From the pear-tomato, we might develop another Ponderosa.

Now if we can make these changes with plants and animals, why not with apples? If one tree bears better than another, and one limb on this tree better than another, and one twig better than any other, why not cut a scion from this and have an improved apple? The apple can be improved just the same as any grain or plant. But no amount of handling can ever make an individual race horse into a draft horse. The feed, the training, and the selection might soon show in his offspring. No amount of training could ever enable the best greyhound to follow the trail. There must be a new creation before there can be an advance. So with the apple. A Ben Davis is just a Ben Davis and no amount of selection can ever change its nature. All Ben Davis trees are only parts of the first Ben Davis tree. By environment you may make the greyhound act differently in trying to follow the trail, but when you remove the environments, he is just a greyhound still.

I have been assured that there are several kinds of Ben Davis apples. The dark red, the streaked and the good Ben Davis. Yes, I have seen all of these, and yet I know there is only one. I have brought these together on the same stock. Then there was no difference. In my father's orchard were the brightest and highest colored Bens I ever saw grow in Indiana. In our own orchard they were very light colored. I inserted grafts from one of these highly colored trees into one of the lightest of my own. When these grafts produced fruit it was as light colored as the rest on the tree.

In father's orchard were the largest and best flavored Rambos I ever saw. In my own orchard the Rambos were undersized and always of inferior quality. I brought these together on the same tree in the experimental orchard. When they bore, there was no difference.

Sam Wright of Jennings County, Indiana, told me he had an apple I ought to try in the experimental orchard. It was a little green Genet of very superior flavor. He was very sure it was entirely different from Rall's Genet. I fruited it in the experimental orchard and had as perfect a Ralls as ever grew.

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There are two Grimes trees in my old orchard, now belonging to the Burton Fruit Company, that up until twenty years old, never produced one-tenth of a crop. Another tree was remarkable for producing good crops annually. On this account parties believing in this selective theory have propagated thousands of trees from this one. In the experimental orchard I top-worked several trees with scions from this one and with scions from the shy bearers. There has been no observable difference in the time and amount of bearing.

I obtained Warfield strawberry plants from a noted grower and great enthusiast about "pedigreed" strawberries, after he had selected and improved them fifteen years. I had kept up my strawberry patches by planting the tips during the same period. I planted the so called "pedigreed" over together with my tips. No one could have observed any difference in the size or amount of the berries. I have tested grafts from nursery stock propagated from nursery stock, for forty years, on the same tree with grafts from bearing trees. There was no difference in the bearing.

If there is any truth in the proposition that a variety of apples may be changed by selection I certainly ought to have found something of it in the above experiments. I know there are such things as "sports" in all vegetation. Sports, however, come without being pedigreed.

The testing of old varieties has been worth much. I am consulted much as to the comparative worth of many varieties. Their behavior in this orchard gives a ready answer. Again I receive many varieties for a name. The orchard is my dictionary.

All the work has been done in the experimental orchard. So close has been the connection between it and our own orchards that the work has been carried on wherever most convenient. In fact, many people in the State don't seem to know which is tother. They come to see the work being done here. Through the combined influence of the experimental orchard and that of the Burton Fruit Company, great stimulus is being given to apple growing in southern Indiana.

The orchard yielded fairly in 1909 and 1910. Through Purdue a large display was made at the last state fair. Several barrels were sent to Purdue for scientific work. A barrel of Grimes was sent to the Farmers' Institute conference. I furnished a letter of explanation impersonating Grimes; it, with a reply by Professor Latta and a poem by Mr. and Mrs. Ogg follows:

A Plea for the Grimes Golden.

Though not regarded by you of sufficient importance to be allowed a place in your deliberations, I beg that I may be admitted to your presence to plead my claims. Because people flatter me so much, I have thought it

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well to attend your meeting and present the claims of myself and kindred, that we might have a firmer hold on homes in Indiana.

Every Hoosier lavishes compliments on me, and I am welcome in any society as a guest, but only a few are willing to give me an abiding home. I, and my kindred, have been almost driven out of our dear old Indiana. We have found a home in the great Northwest, where we are petted and coddled and dressed up in supernatural beauty. Out there we have become very proud and haughty. Though we look with disdain on our eastern selves, we know our reign will be short, for we do not develop that sweet and winning personality that we do in dear old Indiana, our happiest home. We do so much want to live in Indiana. Everything is so congenial to us. We love its rugged hills. I have such a happy home with my dear old friend, Joe A. He allows me some rights on the farm, and how I do love to serve him. I am not afraid of losing my place. This summer I just made him think I was it. I brought him in gross returns over $1,200 per acre. Fully three-fourths of this was profit. What other interest could yield him one-tenth the income? My earning capacity was 1,400 per cent. on the cost of my home site. I just felt so big that I prevailed on Joe A. to ask everybody to come and see me on the first of September. Many came, and how I did spread before them. I thought I would surely gain new homes with them, but alas, nearly all of them were towns people.

While they lavished all sorts of compliments on me, they had no room to give me a home. Within a radius of four miles, only two farmers came to see me. They were old men who cannot last, to grow me to a useful age. I don't know what to do. I do want to develop in Indiana so bad. The farmers refuse me; you fellows have not given me the attention I think you ought. Please fondle me, kiss me, enjoy me and go out and try to secure happy homes for me.

Yours for happier and more prosperous homes,

GRIMES GOLDEN.

Professor Latta's reply:

TO THE YELLOW, MELLOW FAMILY OF GRIMES GOLDEN.

Dear luscious Mr. and Mrs. Golden, sappy big Master Golden, and sweet Miss Golden:

We are so glad you came to the farmers' institute conference. We enjoyed you so much. We gave you a warm place right next to our hearts.

Although so quickly gone, you are not forgotten. Come again. The latch string is out for you.

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We hope, a little later, to have you on many of our farms in our homes and at our tables. Through the Farmers' Guide we are going to speak a good word for you to our fellow Hoosiers all over our beloved Indiana.

Through Joe A., your good friend and ours, we thank you for your sunny visit, which still lingers as a golden memory. May your tribe increase and spread to cheer and bless the farms and homes of Hoosierdom.

GRIMES GOLDEN.

To Miss Grimes Golden,
Of fame well olden,
And yet so fresh and new,
We bring this greeting,
We're glad of this meeting,
And pledge you allegiance true.

We cannot to save us,
From Snow to Ben Davis,
Remember an apple so bred:
Not any Rome Beauty
Has so done its duty,
Nor even the old Pryor Red.

Now Jonathan himself
Is laid on the shelf
In trying to rival your hue.
The Genet and Pippin,
It keeps 'em all tripping
To trot in the same class with you.

Your color entrances,
Your flavor enhances.
Your juices are rarest and sweet.
We cannot remember,
From June to December,
An apple so rarely complete.

In short, you're a hummer,
And any new comer
Will certainly have to make good;
We not only greet you
But love you and eat you
And treat you as any man should.

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So we welcome you hither
And promise that whether
We wander afar or stay,
We'll all tell your story,
Extending your glory
As far as we can on the way.

Now Joseph A. Burton
Is certainly flirtin'
With this maiden of whom he would tell:
But how do we know
But some other Rambo
This lady might like just as well.

To some it seems strange
How great is your range;
We'll give up the orange and banana,
We'll cut out the cherry
And every old berry,
If you'll stay here in old Indiana.

In 1902, sixty Winesaps were planted for the German Kali works to experiment on with commercial fertilizers. These were applied single and combined with check trees untreated. So far the fertilizers have had no observable effect. For two years the same experiments have been carried on in the old orchard of the Burton Fruit Company, with the same results. Much credit is due the Kali people for these free experiments. The Winesaps in the experimental orchard from now on will be an important factor in its financial work. Many of the varietal trees contribute little, or nothing, to this purpose. Ripening at all seasons and so many kinds makes a mixed up muss. Often a bushel contains a dozen or more varieties. Of course these must sell at a discount.

We have one freak seedling. It leaves out about ten days after Genet. Has not borne yet. If the fruit is good it will be quite an acquisition.

In speaking of experiments, I omitted one. That was to determine the influence of the stock on a variety. Found that it might affect the size but not the nature of the fruit.

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THE SCALECIDE TROPHY.

Prize cup given by the E. G. Pratt Company of New York City for the best three bushel boxes of apples in 1910.

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PRODUCING THE PRIZE APPLE.

By C. N. LINDLEY, Salem, Ind.

(Winner of the "Scalecide Trophy" for the best three bushel boxes of apples in 1910.)

It is certainly a pleasure to produce the very best that can be grown of any kind of fruit or in fact to be able to produce any article that merits the first prize or highest honors.

It was my privilege and pleasure to be the winner of the "Scalecide Trophy" cup given by the B. G. Pratt Company, of New York City, for the best three bushel boxes of apples shown at the annual meeting of the Indiana Horticultural Society held at Indianapolis, December 7 and 8, 1910. The method of producing these was as follows:

The orchard upon which these apples grew was planted in the spring of 1887, cultivated for a few years and then let grow up in grasses. For the last five years the trees have been mulched heavily each year with wheat straw and fertilizer and stable manure. I have sprayed with Bordeaux and Paris green for a number of years but the present year have used commercial lime-sulphur solution with arsenate of lead for a poison and the results have certainly been very pleasing, and entirely satisfactory in every respect.

The first spraying was given just before the buds opened, with one and one-half gallons of the lime-sulphur and two and a half pounds of arsenate of lead added to fifty gallons of water. Just after the bloom had fallen, this same spray solution as used for the first spraying was repeated and the trees were given a thorough drenching. Ten days later this same proportion of lime-sulphur and arsenate of lead were used again and the results were very gratifying indeed. The codling moth was completely controlled and the apples were at least 99 per cent. free from worms. This orchard, has, previous to this past year, been badly affected with curculio, but this year the curculio was entirely conquered and the fruit was clear of these stings. I think the credit should be given to the arsenate of lead for the riddance of this pest.

The foliage in this orchard has been perfect and I attribute it to the lime-sulphur largely, and believe it is the simplest and most perfect fungicide ever produced.

The following paper was put into the hands of the Secretary at the close of the winter meeting by Mr. Ben F. Biliter, editor of "The Farmer's Guide," Huntington, Indiana. The paper had come to Mr. Biliter from the hand of one of the noblest of those pioneer horticulturists of our State

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who have honored our Society by their loving interest, the late William Henry Ragan.

The distinguished authorship of the paper (Henry Ward Beecher, by the way, was one of the early secretaries of the Society), together with the interesting historical light which it throws upon Indiana Horticulture nearly seventy years ago, make unnecessary any apology for its insertion in the transactions of this Society.

REMINISCENCE OF EARLY DAYS OF INDIANA HORTICULTURE.

(Interesting communication from HENRY WARD BEECHER, written for the Magazine of Horticulture, of Boston, Massachusetts, March, 1843.)

The arrival of the January number of your Magazine has moved me to begin a letter, projected months ago, but hindered by numerous professional engagements. Indeed, I began a letter giving you an account of our October fair (of the Indiana Horticultural Society—Ed.), which I have burned. So I will begin as far back as last summer, and give you a brief view of horticultural operations in the State. Our condition may interest you less and the extent of our operations—than by their progress —in so new a State.

In this town, the capital of the State, the stumps of the original forests yet remain in many streets; I aided in digging one out of the very centre of the town, close by our church, last summer, and stumps with us have no such immortality as belong to your pine stumps, but decay in a few years. Our citizens are not wealthy, and still less are they men of leisure. All that is done among us is not done by wealth, or as a remedy for ennui, but by busy, thriving, hard-working men who love horticulture.

In this State we have an area a little more than four times greater than Massachusetts. There are eighteen nurseries, whose proprietors are chiefly supported by their sales. Apple trees sell for ten, and pear for twenty cents. An orchard is to be found upon almost every farm, and lately the pear has been more than ever sought after.

At our October fair was exhibited the greatest variety of fruits and flowers ever exhibited in this State; perhaps I may say, in the West. From thirty-five to sixty varieties of apples were shown, and forty-three new seedling apples competed for a premium. A branch of the R. I. Greening was exhibited, two feet in length, bearing fifteen apples, weighing 12 pounds and 9 ounces. I send you a brief account of the fair, enclosed in some other papers. You will see a beet mentioned weighing 32 pounds. You will also see three seedling apples named and recommended for cultivation—Tariff, Red Jacket, and Osceola; the two first, capital fall apples; the last supposed to be a first rate winter apple. Those which

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we have are not yet ripe (January 24), nor at all fit for eating. The number of seedling apples in this State is very great, and some of them, in the neighborhood in which they grow, are esteemed more highly by the settlers than the old standard fruits. The soil and climate so modify the flavor and other qualities of the apple that there is some reason for believing that an apple originating on any given soil will be better than many which are introduced into it; for though the apple is raised with great facility in almost every soil, yet it is probable that each variety affects a particular one and will refuse its most perfect qualities to all except that one. Thus, I perceive the most popular apples of New England are natives—the Rhode Island Greening, Hubbardston Nonsuch, Roxbury Russett, Baldwin, Minster, etc. The choice apples of the middle States are natives of them, and, to a very considerable extent, this is becoming true of the West.

THE SOCIETY'S MEETING.

The annual meeting of our Society (Indiana Horticultural), was held during the winter, so that the great number of citizens from abroad during the sessions of our courts and legislature, may be reached and interested in this subject. I shall send you the reports, addresses and proceedings of our winter meeting as soon as they are published. I omitted to mention that, on selling the fruit last October, great competition arose for the pears, and they sold for 12½, 25 and 50 cents apiece, many of them. I obtained the only specimen of Duchess d'Angouleme (the first, I believe, which has ripened in the State) for the moderate price of 62½ cents. I am afraid that I should have doubled the bid rather than have lost her ladyship; and if all duchesses are of equal worth, commend me to their society. I need not say that I was "somewhat filled" with her company. It was not a dear bargain in the sequel, for the gentleman who raised it was so much pleased with my enthusiasm for his favorite that he presented me with a tree of the same kind and one of the Beurre d'Aremberg. You will perceive, when you obtain the report of our winter meeting, that a premium of $50.00 is offered for seedling apples. Other premiums, to encourage gardens, the obtaining of choice fruit trees, introduction of hardy shrubs and flowers, etc. Our great design is to *awaken in the body of the people, among farmers, artisans and men of small means*, a taste for fruits and flowers and to fill the State from the beginning, with the most select varieties. The peach, plum, pear, quince, apple, cherry, apricot and small fruits might search through our land and find no better soil and climate for their perfection than that of Indiana. Our variable springs are almost the only obstacles.

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Long summers, brilliantly clear atmosphere, great warmth and dryness during the fall ripening months, give our fruit great size, color and flavor. If the mass of the community take hold earnestly, amateur cultivators will spring up of themselves. As it is, I remember very few gardens in Massachusetts, except near large cities, which could compare with ten or twenty in this town. (Indianapolis is a town of about the size of Northampton.)

GARDEN AND TAVERN AT MT. MERIDIAN, PUTNAM COUNTY.

In going to Terre Haute last summer, I stopped at a small, poverty-stricken little town called Mt. Meridian. Shackly houses, huts and hovels, pale faces, ragged children gave no great expectation of refinements. Putting up at the best tavern (now the Mid-Way House), (at the West, no matter how small the town, there are always from two to five or even eight taverns to choose among), I soon retired to bed as the easiest way of reaching the next morning. On rising and going into the rear of the building for washing water (we are always allowed to help ourselves to such trifles), I found the well standing in the middle of a very beautiful little flower garden, neat beds, filled with flowers, clean walks and trimmed borders. I could hardly trust my eyes. From the rear of the garden I could almost throw a stone into the primeval forest whose fragments yet lingered in parts of the garden, and the house itself was poorer than many a barn which I have seen in Pennsylvania and Massachusetts. Opening a rude wicket gate I entered a spot of nearly an acre, well laid out and filled with the choicest vegetables, growing with the most vigorous health. Currants, raspberries (white and red Antwerp), strawberries and gooseberries, were thriving, and many select varieties of pear and apple. The whole garden bore evidence of careful cultivation and good taste. Such a spot, in such a town, and behind such a house, surrounded and almost overshadowed by the forest and produced, not by wealth, but by the personal labor of one man, poor and advanced in life, delighted me more, I do believe, than would the grounds of the London Horticultural Society. If every county in our State had one such citizen I should not fear for horticultural interests in our State. The best assortment of seeds and plants which our town will afford shall be at the service of such a cultivator the coming spring.

We know of no way of circulating your excellent magazine so feasible as offering it as a premium, and you will see that we have done so in several instances.

You will be pleased to learn that many of the pears which have given out in New England do well as yet with us. The St. Michael (or Fall

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Butter, as it is called here) thrives and bears excellently well, though Kenrick, following Fessenden, says that in New England it is "an outcast, intolerable even to the sight." The specimens at our fall fair could hardly be surpassed.

A number of public spirited gentlemen have associated to plant all the private streets in this town with shade trees. We shall select from the ample stock of our own forests, mostly. But it is proposed to put in a number of pear and plum trees, the first being a beautifully shaped tree as well as fruitful, and the plum, it is thought, will be free from the curculio, planted upon a highway. In the three squares upon which stand the State House, Court House and Governor's House, it is proposed to gather and plant a specimen of all our forest trees.

A PLEA FOR THE NATIVE TREES.

This reminds me of an incident in our early town history related to me by one of the first settlers. A large circle of nearly four acres was reserved in the center of the town (now Monument Place), and the native trees, sugar maples, left standing upon it. Under these trees, before churches were built, religious meetings were held in summer and the prospect was that our town would have an adornment in this little grove which no architect can bestow. One morning, however, I was attracted hither by the sound of an ax and found one of the leading lawyers in the place exercising himself as a preparation for breakfast in felling one of the largest trees. It was too far cut to be saved. So good an example could not be lost upon others. One by one, these magnificent trees disappeared. Now we have a huge, yellow brick building (the Governor's House) in the center of this circle. About a dozen locusts, with stems half as large as one's wrists, have, for the last three years, been struggling for life until they seem weary and faint and so stand still.

THE COURTHOUSE SQUARE.

The Courthouse Square, somewhat larger than the former piece of ground, was covered with a noble growth of stately trees and it was determined to save them. A man was sent, however, to thin out the plat, and being left to his own discretion, he felled all the younger trees and left the very old and tall ones standing. As might have been expected, the first wind, finding an easy passageway through, uprooted a multitude of trees. And the citizens, to save the rest from a like fate, chopped them down instantly and happily relieved this square, too, from unpleasant shade. All is not yet told. At a later day, a number of gentlemen procured an order (if I mistake not), from the county commissioners to plant out the ground

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with shade trees, and a large number of locusts were set. However, that nothing might break in upon the practice of the county, the jailer's cow was permitted to pasture upon the plat and, in the sight of citizens, she proceeded to patiently bark the trees or break them down, until not a single one was left. A gentleman, not without a taste for horticulture, from day to day saw, from his office door, this destruction, as he informed me with great naivete, as though it were a sin to interfere and save the trees. Thus, in all our towns comes first, extermination, then scorching summer suns and, too late, the wish that the trees had been spared; and at last planting begins and we who live amid the immense forests of a new country, on whose town plat, not fifteen years ago, grew immense oaks, maples, sycamores, beeches, tulip trees and elms, are planting the short lived locusts (Robinia pseudo-acacia) to obtain a speedy shade. I can think of but three forest trees now standing in this town within a space of one mile square, two elms and one buckeye. The same scenes are enacting in every town which springs up in the West. We are gaining meadows and corn bottoms and green hillsides and town plats by an utter extermination of the forest.

Here and there an Indian may be found lingering around the old possessions of his nation as if to mourn their loss and to remind us of his ancestors, but of the forest it is almost true that not a single tree is left to recall to our minds the glory of its fellows. Indeed, I have thought that those who were obliged to clear farms, or timber land, imbibe the same feeling toward trees which the pioneers have towards the Indian, as things to be destroyed, of course. This devastation of our forests, the political economist regards as a blunder and says it is an unthrifty practice, but one who looks upon trees almost as if they had souls witnesses this needless extermination with some feelings which cannot be expressed in the pound and penny language of the mere economist. I think it is Michaux who pronounces the full grown elm to be the most magnificent production of the vegetable kingdom. Is not an old and tall and broad and healthy tree nobler to the eye than any temple or cathedral? The wonder of a century's growth ends in an hour by some man who never for a moment thinks of the majesty and beauty of his victim—who only thinks how soonest to get it down and burned up and out of the way of the plow.

Respectfully yours,

Indianapolis, Ind., January, 1843. H. W. BEECHER.

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REPORT OF THE WAYNE COUNTY AGRICULTURAL AND HORTICULTURAL SOCIETY OF RICHMOND, IND.

To the Indiana Horticultural Society:

In submitting this, my annual report to your Society, of the Wayne County Agricultural and Horticultural Society, it is well to note that our organization has completed the fifty-fifth years of its existence. In 1855 our Society was organized in Richmond by a few influential citizens who were tillers of the soil and growers of fruit. Continuously it has held its meetings, usually on the second Saturday of each month, elected its officers annually and been foremost in participation in local and county affairs.

At the residences of some of the members the past year our summer meetings were held. Others were in the Society's room in the courthouse.

During the long period of its existence, many men and women prominent in business and political affairs were enrolled among its members, and it is believed that much good has been accomplished by its location and influence.

The following is a list of the officers that served during the present year:

President, Hon. Jesse C. Stevens.

Vice-President, Thomas Elleman.

Secretary, Hon. Walter S. Ratliff.

Treasurer, T. Evans Kenworthy.

Corresponding Secretary, Caleb W. King.

Executive Committee: Hon. Jesse C. Stevens, ex-officio; Thomas Elleman, Isaac Dougan, Stephen Kuth, Mary Dickinson, Caleb King, Essie Burgess, Emeline Dougan, Eliza Stevens and Capt. W. H. Lough.

Usually the annual dinner has been held at the February meeting. This year it was held at the suburban residence of Isaac Dougan of this city. Hundreds were in attendance and enjoyed one of those famous strawberry dinners. It is quite probable that subsequent dinners will be held in June.

At the country residence of our president, a practical demonstration in pruning and spraying fruit trees, under the direction of experts from Purdue University, was made in his orchard to many of the Society members and their invited guests.

Our Society took an active part in both the agricultural and horticultural departments of the Fall Festival and paid a portion of the premiums that were awarded. In many respects this was the best exhibit of its character that has been made in this city for many years and reflected much credit on its management.

During the past few years death has removed many of the older

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members, including its last charter members, who were most active in the spheres of work undertaken by the Society.

Agriculture: For the past three years the farmer has been very successful in his farm operations. Crops have been good, with prices of grain and livestock above an average, enabling him not only to pay off incumbrances on his farm, but to purchase additional land where desired.

Corn: But few fields equal to an average. Most corn, owing to the summer's drouth, did not mature well, and the storm in October blew the stalks down so badly that the ears, during the late rains, failed to dry out properly, leaving much soft corn to be gathered.

Hay: Timothy and clover fields generally were too weedy for good hay, while alfalfa made a rank growth, yielding three good cuttings. Hay was saved, however, in good condition.

Wheat: A fair yield of wheat that was cut and threshed without difficulty. Growing wheat fields that were sown too early are suffering from the ravages of the Hessian fly. Fields generally have "greened" well and in prime condition to enter the winter.

Rye: Not so many acres sown to rye as usual, but is rank and green. The harvested crop was good.

Oats: Many good fields of oats were harvested, being threshed in good time, assuring good feeding qualities and fine seed for next year.

Livestock: Farms are fairly well stocked with hogs and cattle that have been meeting with ready sale and commanding good prices. Where cholera appeared, hogs were marketed early to prevent danger of loss from death by this disease.

Horticulture: Fruit growers did not have much fruit of any consequence this year, doubtless due to the late spring freezes following an abnormally warm spell of weather. Owing to the prevalence of scale in the orchards, but few fruit trees have been set out of late, and farmers have abandoned the idea of putting out any new orchards.

Apples: An occasional summer or fall variety yielded some fruit, but scarcely a tree of a winter sort yielded fruit of any consequence, and where found, was imperfect.

Pears: Aside from the Bartlett, Flemish Beauty and Duchess, which yielded but sparingly, there were no pears grown in this locality. This was true of both old and young trees.

Plums: Scarcely a tree grew any plums in this locality this year, the fruit of which was of no value, due to defects and attacks of the curculio.

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Quinces: On protected, long-bearing trees, quinces grew in considerable numbers, but usually only a few trees could be found with any fruit thereon.

Cherries: About two-thirds of an average yield of cherries, embracing all varieties on both young and old trees.

Peaches: Wherever peaches matured they were almost valueless, for the abundance of larvae of the curculio, codling moth and other insects.

Grapes: The two or three late freezes of last spring almost entirely destroyed the prospects of any grapes, and but few bunches of any variety were secured.

Strawberries: About one-half crop was gathered. Late freezes accounted for this loss. Late bloomers, together with thick mulching of strawberry plantations, yielded best.

Raspberries and Blackberries: A light crop of the former, but a good yield of the latter were gathered in this county. The dry weather of summer checked the growth of the raspberry, while the later rains aided the development of the blackberries.

Currants and Gooseberries: But a small yield of each. The worms were very destructive to the leaves on the bushes where not kept in check by the sprayer.

Ornithology: Farmers and fruitmen, generally, have long since understood the relation of their work to the presence of our native wild birds. Efforts have been made to not only protect these friends, but to encourage their presence in the field and orchard by planting extra cherry and Russian mulberry trees, thus affording inviting fruit to these birds when most needed.

WALTER S. RATLIFF, Secretary.

Secretary's Note:—The prevalence of insect and disease pests noted in the above report would seem to constitute a self-confessed failure on the part of the members of the Wayne County Agricultural and Horticultural Society to *do* as well as they *know* in caring for their fruit crops. Let us hope that the condition of horticulture in old Wayne County, with her unsurpassed opportunities for profitable fruit growing, is not so dark as it is painted.

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MINUTES OF MEETINGS OF EXECUTIVE BOARD.

STATE HOUSE, Indianapolis, December 2, 1909.

Meeting called to order after adjournment of Society meeting. Those present were, C. N. Lindley, President; W. C. Reed, retiring President; G. C. Grossman, Vice-President; C. G. Woodbury, Secretary; W. B. Flick, retiring Secretary; S. A. Hazelett, Treasurer, and H. H. Swaim, E. Y. Teas and James Troop of the Executive Committee.

Moved by Mr. Swaim that in future members of the Horticultural Committee, consisting of the thirteen district vice-presidents, shall be allowed only their railway fare and no other expenses when attending State Society meetings. (Carried.)

Moved by Mr. Swaim, that in lieu of other compensation, a box of apples, each, be forwarded with the compliments of the Society to Dr. Gobin and Professor Denny of Greencastle for their addresses relating to Professor Ragan. (Carried.)

Moved by Mr. Swaim that the retiring secretary be allowed the same salary for the two months' service due him (October and November), as that paid the incoming secretary, or $16.66 for the two months. (Carried.)

Moved by Professor Troop that the salary of the secretary be made $100 per year for the ensuing year. (Carried.)

Moved and carried that Mr. W. B. Flick be appointed agent for the Society in ordering spray materials for Society members under the existing contract with the Grasselli Chemical Co.

It was suggested that Mr. Flick see if an arrangement could be made with the company whereby he might be allowed sufficient commission on goods handled to compensate him for his trouble.

The following bills were allowed:

Mrs. Ella Green, for stenographic work	$45 00
A. Garretson as member Horticultural Committee	3 15
S. A. Hazelett, premiums paid	119 40
Sentinel Printing Co	19 65
W. B. Flick	55 02
E. Y. Teas, expense as member Horticultural Committee	3 25
J. Snodgrass, expense as member Horticultural Committee	3 65
H. H. Swaim, expense as member Executive Board	10 55
J. J. Milhous, expense as member Horticultural Committee	1 75
H. M. Stout, expense as member Horticultural Committee	6 25
J. Troop, expense as member Executive Board	5 50

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W. C. Reed, expense as president	7 68
C. N. Lindley, expense as vice-president	12 60
A. H. Bogue, member Horticultural Committee	9 60

Meeting adjourned. C. G. WOODBURY, Secretary.

LAFAYETTE, IND., January 12, 1910.

On order of President C. N. Lindley, a meeting of the Executive Board was held in the Secretary's office at Lafayette, January 12, 1910.

Those present were C. N. Lindley, President; J. C. Grossman, Vice-President; C. G. Woodbury, Secretary; S. A. Hazelett, Treasurer; Professor James Troop, E. Y. Teas and H. H. Swaim.

A number of matters were discussed relating to the work of the Society for the ensuing year.

Moved by Mr. Swaim that Mr. Burton be retained as Superintendent of the Experimental Orchard at his present salary, $500 per year, and that the President and Secretary be instructed to have bills presented by him. (Carried.)

Moved by Mr. Grossman that the summer meeting be dispensed with for 1910 and that efforts be concentrated on the holding of a state apple show at Indianapolis in the fall at the semi-centennial of the Society. (Carried.)

Moved by Mr. Swaim that Mr. Hazelett be appointed agent for the Society in ordering spray materials for Society members from the Grasselli Chemical Co. until March 30th, when the present contract expires. (Carried, and Mr. Hazelett declared to be authorized agent.)

The following bills were allowed:

C. G. Woodbury, Voucher No. 151:

Dec. 16, railroad fare Lafayette to Indianapolis and return	$2 00
Dec. 17, drayage and packing books, Indianapolis	2 75
Dec. 17, interurban freight, 5 boxes Horticultural Society Reports, Indianapolis to Lafayette	1 10
Dec. 18, interurban freight, 5 empty book boxes, Lafayette-Indianapolis (Library Commission)	25
Dec. 20, postage stamps	2 00
Dec. 20, postage stamps	15 00
	$23 10

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C. G. Woodbury, Voucher No. 152:

Dec. 31, 1909, Celia E. Kenzler, stenographic work, 87 hours at 20c	$17 40
Jan. 6, 1910, Burt-Haywood, stationery	14 00
Jan. 10, 1910, rubber signature stamp	1 35
Jan. 12, 1910, Celia E. Kenzler, stenographic work, 25 hours, at 20c	5 00
	$37 75

J. C. Grossman, Voucher No. 153:

Expenses attending meeting Executive Board	$2 85

Mrs. Ella Shera Green, Voucher No. 154:

Reporting 49th annual meeting and transcribing manuscript	35 00

Samuel A. Hazelett, Voucher No. 155:

Dec. 2, 1909, paid H. E. Weed, lecturer, 49th annual meeting	$10 00
Jan. 12, 1910, postage stamps	1 50
Expenses attending Executive Board meeting	2 70
	$14 20

H. H. Swaim, Voucher No. 156:

Expenses attending Executive Board meeting	$5 30

E. Y. Teas, Voucher No. 157:

Expenses attending Executive Board meeting	4 95

C. N. Lindley, Voucher No. 158:

Expenses attending Executive Board meeting	9 75

Meeting adjourned. C. G. WOODBURY, Secretary.

INDIANAPOLIS, IND., November 5, 1910.

On order of President C. N. Lindley, a meeting of the Executive Board of the Indiana Horticultural Society was held in the Secretary's office, Room 11, State House, Indianapolis, Indiana, on November 5, 1910.

Those present were: C. N. Lindley, President; J. C. Grossman, Vice-President; C. G. Woodbury, Secretary; S. A. Hazelett, Treasurer; Prof. James Troop and E. Y. Teas.

The minutes of the previous meeting were read and approved.

The secretary stated the object of the meeting was to consider a number of matters relating to the conduct of the business of the Society and to the arrangements in regard to the semi-centennial meeting of the Society, to be held on December 7 and 8. Among the subjects discussed were the program, the premium list, the experimental orchard at Mitchell, the present status of the Society's membership and the financial situation.

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The secretary asked that a ruling be made as to how long non-paying individuals should be carried as members of the Society after dues became payable, and how soon such should be dropped. Some difficulty had been encountered by the secretary on this account and definite instructions were desired.

Moved by Professor Troop that members be carried on the books one year from date dues become payable and then if payment is not made, their names be dropped, it being the duty of the secretary to see that such individuals receive proper notification before their names are taken from the books. (Carried.)

It was taken by consent that the State fiscal year, October 1 to September 30, be regarded as the fiscal year of the Society, and that all membership fees be payable at the beginning of such fiscal year, October 1.

The secretary stated that in view of the fact that the next meeting would be the Society's fiftieth anniversary, a special effort should be made to get out an attractive souvenir program.

Moved by Mr. Grossman that the secretary be instructed to have the program printed attractively and in a manner suitable to the occasion. (Carried.)

The secretary raised the question of compensation for members of the Society appearing upon the program. It was argued in discussing the matter that members who were asked only for a three minute talk on matters of their own experience were on a different footing from those who were asked for a paper which alone would make a whole number on the program and which would require careful preparation in advance.

Moved by Professor Troop that members of the Society furnishing a whole number on the program be placed on the same basis of compensation as the District Vice-Presidents. (Carried.) (District Vice-Presidents presenting reports are compensated for railway fare for attending the meeting, but not for incidental traveling expenses, hotels, meals, etc.)

Arrangements were discussed relating to the fruit show to be held in connection with the Fiftieth Annual Meeting. The secretary stated that he felt that he should personally receive all dues and issue all receipts therefor, rather than to have a temporary deputy and that a committee, other than the Secretary, should be appointed to arrange the exhibit, receive entries, etc.

Moved by Professor Troop that J. C. Grossman be appointed a committee to look after the exhibit, with power to appoint an assistant. (Carried.)

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The question of judge of the exhibit was discussed. Mr. Farrand's name was presented but it was pointed out that he would not be present long enough to act in this capacity. The names of Mr. Coffin, Mr. Stout and Mr. Simpson were also considered.

Moved by Mr. Teas that the secretary be instructed to ask Mr. J. F. Coffin, of Greenfield, to act as judge of the exhibit with Mr. Robert Simpson, of Vincennes, as alternate, the judge to receive $5.00 for his services. (Carried.)

The Secretary presented some figures showing that if the Society continued to run till the close of the current fiscal year, Sept. 30, 1911, on the present basis of expenditures, it would have a deficit in the treasury. The Secretary asked that the Board formulate some policy which it could recommend to the Society at the next meeting and which might avert the impending financial crisis. After considerable discussion, the Board felt that the situation contained a number of factors which every member of the Society should understand before the meeting and to this end directed the Secretary to prepare a rough financial statement, together with a discussion of the several considerations involved, and send same to every member of the Society in the form of a circular letter as soon as possible.

The following bills were allowed:

1910. C. G. Woodbury, Voucher No. 162.

Jan. 10, freight and express on apples for Society exhibit at Farmers' Short Course at Purdue	$4 49
Jan. 17, one package index cards	20
Jan. 19, interurban carfare, Lafayette to Indianapolis and return, to present manuscript of Report, to printer	2 50
Jan. 19, two receipt books	1 00
Jan. 20, one card alphabet 3 x 5 file	20
Jan. 31, stenographic assistance to Feb. 1st	6 50
Mar. 19, assistance in preparing index to 49th report	4 80
Apr. 26, postage	6 00
May 11, 500 clasp envelopes with printing for mailing reports	4 75
May 16, postage	20 00
May 31, stenographic assistance to June 1	8 40
Jan. 1, salary for March, April and May	25 00
	$83 84

The foregoing bill had been already approved by each member of the board without a meeting and had been paid previous to Oct. 1st. It is inserted here only as a matter of record.

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C. G. Woodbury, Voucher No. 163.

May 12, U. S. Express Co., Exp. on Society reports	$1 05
June 2, Sentinel Printing Co., Binding Soc. Proceedings	2 00
June 3, Carfare, Lafayette to Indianapolis and return	2 50
June 17, Burt-Haywood Co., 1 M. Letter Heads	3 50
June 21, Am. Exp. Co., Book boxes to Indianapolis	40
	$9 45

C. G. Woodbury, Voucher No. 164.

Aug. 8, Geo. P. Haywood, P. M. Stamps	$1 80
Aug. 29, Geo. P. Haywood, P. M. Stamps	4 00
Oct. 4, Celia E. Kenzler, Stenographic work	9 00
Oct. 13, Geo. P. Haywood, P. M. Stamps	2 00
Oct. 29, Western Union Telegraph Co., Telegram to C. N. Lindley	20
	$17 30

C. G. Woodbury, Voucher No. 165.

Nov. 2, Burt-Haywood Co., 1 Record Book; 500 blank stationery	$3 15
Nov. 3, Geo. P. Haywood, P. M. Stamps	10 00
Nov. 3, Salary for quarter ending Aug. 31	25 00
Nov. 3, Salary for quarter ending Nov. 30	25 00
	$63 15

C. G. Woodbury, Voucher No. 166.

Nov. 5, Whitehead & Hoag Co., 300 membership badges	$18 00

C. G. Woodbury, Voucher No. 168.

Nov. 5, carfare, Lafayette to Indianapolis and return	$2 50
Nov. 5, street car fare	10

Samuel A. Hazelett, Voucher No. 169.

Stationery	$1 75
Stationery	4 00
Nov. 5, car fare to Indianapolis and expense	2 10
Nov. 5, stamps	4 00
Nov. 5, expense in handling Grasselli material	20 00
	$31 85

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C. N. Lindley, Voucher No. 170.

Nov.	5, car fare, Salem to Indianapolis and return	$6 60
Nov.	5, lodging and breakfast	1 00
Nov.	5, dinner	45
Nov.	6, lodging	1 00
Nov.	6, supper	35
		$9 40

E. Y. Teas, Voucher No. 171.

Nov.	5, car fare, Centerville to Indianapolis and return	$2 25
Nov.	5, sundries	45
		$2 70

James Troop, Voucher No. 172.

Nov.	5, traveling expenses attending Board of Horticultural meeting	$2 50
Nov.	5, dinner	40
Nov.	5, street car fare	10
		$3 00

J. C. Grossman, Voucher No. 173.

Nov.	5, round trip, Lafayette to Indianapolis and return	$2 50
Nov.	5, street car fare	10
Nov.	5, dinner	40
		$3 00

The meeting adjourned.

C. G. Woodbury, Secretary.

State House, Indianapolis, Ind., Dec. 8, 1910.

Meeting called to order by President Lindley immediately upon adjournment of the 50th annual meeting of the Society. Those present were, C. N. Lindley, President; J. C. Grossman, Vice-President; C. G. Woodbury, Secretary; S. A. Hazelett, Treasurer, and E. Y. Teas, Prof. James Troop, and H. H. Swaim of the Executive Committee.

Moved and carried that the member representing the Society on the Advisory Board of the Purdue University Experiment Station, shall hold such appointment for a term of one year.

Moved and carried that H. H. Swaim of South Bend, be appointed to represent the Society on the Advisory Board of the Purdue University Experiment Station, to serve for one year from date, vice W. B. Flick of Lawrence.

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An invitation was presented by H. H. Swaim from the St. Joseph County Horticultural Society, to the Indiana Horticultural Society, to hold its summer meeting at South Bend. The invitation was accepted provisionally by the Board, as it was felt that final action should be deferred until the finances of the Society were on a stronger basis.

The following bills were allowed:

Joe A. Burton, Voucher No. 167.

Dec. 1,	to one year's salary as superintendent of the Experimental Orchard, Jan. 1, 1910 to Dec. 31, 1910.....	$500 00

J. J. Milhous (account, Dictrict Vice-President), Voucher 174.

Dec. 7,	fare from Valley Mills to Indianapolis and return....	$2 15

E. Y. Teas (account, Member of Executive Committee), Voucher No. 175.

Dec. 7,	fare from Centerville to Indianapolis and return.....	$2 15
Dec. 8,	hotel and restaurant	1 60
		$3 75

F. J. Heacock (account, Speaker on Program), Voucher No. 176.

Dec. 7,	fare from Salem to Indianapolis	$2 90
Dec. 8,	fare from Indianapolis to Salem	2 90
		$5 80

J. Troop (account, Member Executive Committee), Voucher No. 177.

Dec. 8,	fare, Lafayette to Indianapolis and return.....	$2 40
Dec. 8,	hotel (Receipt No. 2)	75
Dec. 8,	lunches (Receipts No. 1, 3 and 4)	1 10
Dec. 8,	street car fare	10
		$4 35

H. H. Swaim (account, Member Executive Committee), Voucher No. 178.

Dec. 7,	fare, South Bend to Indianapolis and return.....	$5 55
Dec. 7,	meals (receipts No. 1 and 2)	45
Dec. 8,	hotel (receipt No. 3)	1 00
Dec. 8,	meals (receipts No. 4 and 5).....	80
		$7 80

C. G. Woodbury (account, Secretary), Voucher No. 179.

Dec. 6,	fare, Lafayette to Indianapolis	$1 25
Dec. 6,	meals (receipts No. 1 and 2)	55
Dec. 7,	meals (receipts No. 3, 4 and 5)	85
Dec. 8,	breakfast (receipt No. 6)	40
Dec. 8,	Hotel Edward, two night's lodging (R. No. 7).....	3 00
Dec. 8,	fare, Indianapolis to Lafayette	1 25
Dec. 8,	meals (receipts No. 8 and 9)	70
		$8 00

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Turley Burton, Voucher No. 180.

Dec. 7, express on apples donated to Society	$2 10

S. A. Hazlett (account, Treasurer), Voucher 181.

Dec. 8, fare, Greencastle to Indianapolis and return	$1 50
Dec. 8, hotel and board, two days	2 50
Dec. 8, stamps	1 00
	$5 00

Miss Flora Chlzum, Voucher No. 182.

Dec. 8, reporting meeting and transcribing manuscript	$30 00

J. W. Roberts (account, Speaker on program), Voucher No. 183.

Dec. 7-8, meals	$1 50
Dec. 7-8, lodging	1 00
Dec. 7-8, fare, Indianapolis to Washington, D. C.	19 00
Three meals en route	3 00
	$24 50

C. G. Woodbury, Voucher No. 184.

Dec. 8, 500 Programs and envelopes	$23 50

J. T. Coffin, Voucher No. 185.

Dec. 8, services as judge	$5 00

J. C. Grossman (account, Vice-President), Voucher No. 186.

Dec. 6, street car fare at Lafayette	$0 10
Dec. 6, fare, Lafayette to Indianapolis and return	2 50
Dec. 8, Hotel Edward, two night's lodging	2 00
Dec. 6, meals	65
Dec. 7, meals	60
Dec. 8, meals	55
	$6 40

H. M. Stout (account, District Vice-President), Voucher No. 187.

Dec. 8, fare, Trafalgar to Indianapolis and return	$2 00

Wm. M. Walton, Jr. (account, District Vice-President), Voucher 188.

Dec. 6, fare, Laporte to Indianapolis and return	$5 90

C. N. Lindley (account, President), Voucher No. 189.

Dec. 8, fare, Salem to Indianapolis and return	$6 20
Dec. 7, meals	1 45
Dec. 8, three night's lodging	3 00
	$10 65

S. A. Hazlett, Voucher 190.

Dec. 8, premiums paid	$71 50

T. A. Farrand (account, speaker on program), Voucher No. 191.

Dec. 8, compensation as speaker	$20 00

Meeting adjourned.

C. G. Woodbury, Secretary.

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LIST OF INDIANA NURSERYMEN.

(Third Annual Report of the State Entomologist.)

Abraham Brothers, Martinsville, Ind.
J. K. Anglin, Etna Green, Ind.
J. M. Alstott, Corydon, Ind.
T. A. Baldwin, Oxford, Ind.
A. J. Barnard, Westville, Ind.
M. Barnes & Co., College Corner, Ohio.
E. H. Beck, Michigan City, Ind.
Jennie B. Bennett, Scotland, Ind.
A. S. Bennett, Lafayette, Ind.
Samuel Billingsly, Greenwood, Ind.
C. A. Bird, Depauw, Ind.
E. E. Bird, Depauw, Ind.
L. M. Blankenbaker, Borden, Ind.
W. T. Blankenbaker, Borden, Ind.
Mercer Brown, Spiceland, Ind.
Brownstown Nursery Company, Brownstown, Ind.
Porter Broshears, Boonville, Ind.
H. F. Buck, Elberfeld, Ind.
S. H. Benton, Washington, Ind.
Burkhart & Son, Southport, Ind.
W. O. Burns, Pekin, Ind.
J. S. Burgess, Depauw, Ind.
J. P. Burgess, Depauw, Ind.
D. W. Callahan, Pekin, Ind.
P. H. Callahan, Pekin, Ind.
Capital City Nursery Company, Greenfield, Ind.
P. A. Card & Son, Greenfield, Ind.
J. F. Cathcart & Son, Bristol, Ind.
Alva Cathcart, Bristol, Ind.
Herbert Cavanagh, Wolcottville, Ind.
G. W. Childers, Valeene, Ind.
L. B. Cochran, Greensburg, Ind.
Lamar Collins, Underwood, Ind.
Frank Congdon, Bristol, Ind.
J. L. Cook, Warsaw, Ind.
A. M. Cosner, Stilesville, Ind.
Cunningham Nursery Co., Rising Sun, Ind.
H. P. Dean, Indianapolis, Ind.
Dora Dill, Converse, Ind.
Jerry Dutter, Angola, Ind.
E. S. Eickhoff, Julietta, Ind.
Joseph Egloff, St. Meinrad, Ind.
Fred Fordyce, Borden, Ind.

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Willard Fullhart, Muncie, Ind.
W. H. Gaar, E. Germantown, Ind.
Milton Gaar, Cambridge City, Ind.
S. C. Gainey, Doans, Ind.
W. F. Gallamore, Bloomfield, Ind.
D. M. Garber, Pierceton, Ind.
F. B. Garrett, Burns City, Ind.
R. N. Gast, Akron, Ind.
L. H. Girton, Bristol, Ind.
Albert Goehler, Urbana, Ind.
J. K. Graham, New Albany, Ind.
Daniel Gray, Borden, Ind.
Charles Gray, Pekin, Ind.
Alvia Gray, Pekin, Ind.
Chas. Graham, Sellersburg, Ind.
Harry Hass, Terre Haute, Ind.
Halleck Nursery Company, Fair Oaks, Ind.
Joseph Haines, Hatfield, Ind.
Smith Hazen, Hatfield, Ind.
Henby & Son, Greenfield, Ind.
E. G. Hill & Co., Richmond, Ind.
C. M. Hobbs, Bridgeport, Ind.
J. L. Holsclaw, North Nernon, Ind.
L. V. Hopkins, Maxwell, Ind.
M. J. Huber, Deerfield, Ind.
Willard Hurst, Pekin, Ind.
William Hurst, Pekin, Ind.
Heller Brothers, New Castle, Ind.
J. H. Hoppes, Red Key, Ind.
Don J. Henry, Laporte, Ind.
B. W. Hurraw, Butler, Ind.
C. A. Ireland, Brownstown, Ind.
Indianapolis Forest Nursery Company, Indianapolis, Ind.
H. E. Jackman, Waterloo, Ind.
J. A. Jarrett, Keystone, Ind.
E. E. Jones, Plymouth, Ind.
Nathan Karnes, Pekin, Ind.
Thomas Keele, Westville, Ind.
Samuel Kelly, Alert, Ind.
Robert Kent, Haughville, Indianapolis, Ind.
S. W. Keplar, Pulaski, Ind.
Ben Knaub, North Vernon, Ind.
Vernon Krider, Middlebury, Ind.
William LaHayne, Chesterton, Ind.
Frank Leroy, Laporte, Ind.
David Lewis, Fairmount, Ind.
J. W. Lucas, Bloomfield, Ind.
O. Lutz, Portland, Ind.
Chas. McClaren, Corydon, Ind.
Joe T. McClaren, Corydon, Ind.

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McCormack & Osborn, Burns City, Ind.
R. L. McCoy, Hatfield, Ind.
Himar McFeron, Columbus, Ind.
William McElderry, Princeton, Ind.
D. A. McGinnis, Andrews, Ind.
Sylvanus McKinley, Borden, Ind.
B. F. Mason, Martinsville, Ind.
H. H. Meeker, Crown Point, Ind.
Meredith & Son, Koleen, Ind.
Grant Mills, Redkey, Ind.
J. G. Milhous, Butlerville, Ind.
Frank Moffit, Carmel, Ind.
G. N. Moyer, Laketon, Ind.
Asbury Murr, Depauw, Ind.
A. M. Murray, Goshen, Ind.
William Murray, Goshen, Ind.
Charles Nation, Gilead, Ind.
George Neet, Valparaiso, Ind.
J. M. Noble, Sellersburg, Ind.
Alfred Nufer, Bremen, Ind.
Arthur Osborne, Spiceland, Ind.
R. J. Overman, Danville, Ind.
Henry Packwood, Borden, Ind.
R. T. Patterson, Bloomfield, Ind.
W. W. Phelps, Westfield, Ind.
Portland Nursery Company, Portland, Ind.
A. C. Preble, Marion, Ind.
Purdue University, Lafayette, Ind.
Amos Ragle, Elnora, Ind.
G. C. Rape, Farmland, Ind.
W. C. Reed, Vincennes, Ind.
Lee Ripperdan, Valley City, Ind.
G. L. Roberts, Depauw, Ind.
Sig Rogers, Bloomfield, Ind.
W. H. Reed, Hanover, Ind.
C. H. Scott, Winamac, Ind.
Thomas Shields, Anderson, Ind.
Shields, Brothers, Charlottsville, Ind.
A. B. Sibert, Rochester, Ind.
David Sinclair, Mauckport, Ind.
H. M. Simpson & Son, Vincennes, Ind.
Sleeper Bros., Fowler, Ind.
Jas. Sloan, Washington, Ind.
J. M. Snodgrass, Kirklin, Ind.
S. A. Snoddy, W. Lafayette, Ind.
E. E. Smith, Warsaw, Ind.
J. E. Smith, Muncie, Ind.
B. F. Stalker, Borden, Ind.
Wilbur Stout, Mooresville, Ind.
H. H. Swaim, South Bend. Ind.

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E. Y. Teas, Centerville, Ind.
Chas. Quillen, Mooresville, Ind.
G. C. Terrell, Pekin, Ind.
F. Walker & Co., New Albany, Ind.
Thomas Ward, St. Mary's, Ind.
Ira Weaver, Middlebury, Ind.
J. W. Wilson, North Judson, Ind.
W. H. Wines, Gilead, Ind.
G. W. Winchell, Tobinsport, Ind.
J. M. Wickizer, Plymouth, Ind.
C. H. Weber, Greenfield, Ind.
Lee A. York, Battle Ground, Ind.
John Young, Odon, Ind.

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